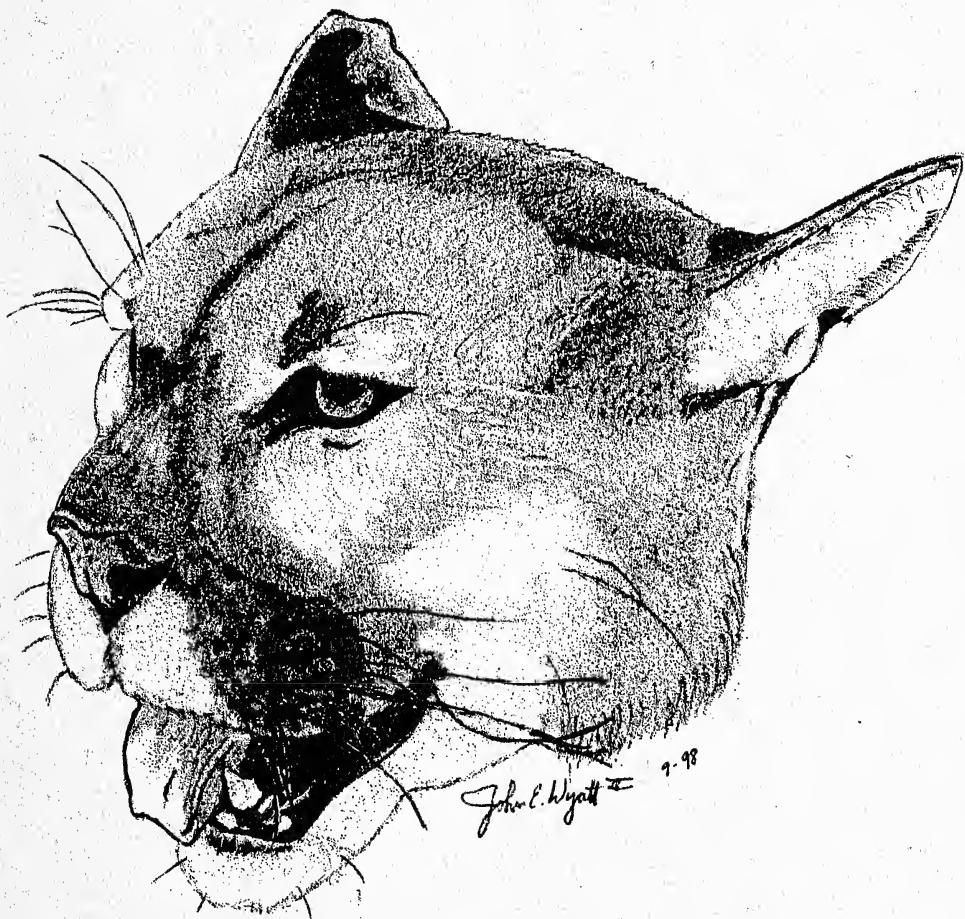


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ANIMAL KEEPERS' FORUM



The Journal of the American
Association of Zoo Keepers, Inc.
January 2000

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About the Cover.....

*This month's cover features the Cougar (*Felis concolor*) known as "Nia", a female that resides at the Montgomery Zoo, Montgomery, AL. Also known as pumas or mountain lions, cougars range throughout North and South America. They are highly adaptable, living in habitats ranging from tropical rainforests to snow-covered mountains. Cougars are solitary animals but males and females will hunt together and sleep next to each other during breeding season. The female will give birth to 2-6 cubs after a 90-96 day gestation period. The cubs will remain with their mother for two years. The cubs may wander off together for several months before establishing territories of their own. This month's artist is John E. Wyatt III, a Keeper I at the Montgomery Zoo. Thanks, John!*

Animal Keepers' Forum publishes original papers and news items of interest to the animal keeping profession. Non-members are welcome to submit articles for consideration. Articles should be typed or hand-printed and double-spaced. Authors are encouraged to submit their manuscripts on a disk as well as in hard copy form. Acceptable formats include: for Macintosh users - Microsoft Word or Works; IBM users - Word for Windows, WordPerfect or Wordstar. All illustrations, graphs, charts and tables should be clearly marked, in final form and should fit in a page size **no greater than 5.5" x 8.5"** (14cm x 22cm). Literature used should be cited in the text (Brown, 1986) and alphabetically in the final bibliography. Avoid footnotes. Include scientific name (as per ISIS) the first time an animal name is used. Thereafter use common name. Use metric system for weights and measurements (standard equivalents may be noted in parenthesis). Use the continental dating system (day-month-year). Times should be listed as per the 24-hour clock (0800, 1630 hrs. etc.). Glossy finish black and white photos **only are accepted**. Color slides should be converted to black and white prints (minimum size 3" x 5" [8cm x 14cm]) before submission. Clearly marked captions should accompany photos. Please list photo credit on back of photo.

Articles sent to *Animal Keepers' Forum* will be reviewed by the editorial staff for publication. Articles of a research or technical nature will be submitted to one or more of the zoo professionals who serve as referees for *AKF*. No commitment is made to the author, but an effort will be made to publish articles as soon as possible. Lengthy articles may be separated into monthly installments at the discretion of the editor. The editor reserves the right to edit material without consultation unless approval is requested in writing by the author. Materials submitted will not be returned unless accompanied by a stamped, self-addressed, appropriately-sized envelope. Telephone and FAX contributions of late-breaking news or last-minute insertions are accepted as space allows. However, long articles must be sent by U.S. mail. Phone 1-800-242-4519 (US); 1-800-468-1966 (Canada); FAX (785) 273-1980.

Deadline for each regular issue is the 10th of the preceding month.
Dedicated issues may have separate deadline dates
and will be noted by the editor.

Articles printed do not necessarily reflect the opinions of the *AKF* staff or the American Association of Zoo Keepers, Inc. Publication does not indicate endorsement by the Association.

Items in this publication may be reprinted providing credit to this publication is given and a copy of the reprinted material is forwarded to the editor. Reprints of material appearing in this journal may be ordered from the editor. Back issues are available for \$3.00 each.

Scoops & Scuttlebutt



Greater Cleveland Chapter Shows Support for AAZK.

The Board of Directors of AAZK, Inc. and the staff of the Administrative Office would like to thank the members of the Greater Cleveland Chapter for their donation of \$500.00 to the general operating fund of the Association. The past several months have been expensive ones for AAZK with the required move to new office space off the Topeka Zoo grounds and the reality of having to pay office rental for the first time in its history. This generous support from the Greater Cleveland Chapter will certainly help as we settle into our new "home".

AAZK Announces Availability of Two Different Granting Programs

The American Association of Zoo Keepers announces the availability of two granting opportunities:

The Conservation, Preservation and Restoration Grant - This \$1000.00 grant is designed to encourage and support efforts in conservation conducted by keepers and aquarists in zoological parks and aquariums around the world. Members of AAZK in good standing are eligible to apply and receive this grant. The member **MUST** have an active role in the conservation effort submitted for consideration.

The Zoo Keeper Grants in Research - Two \$750.00 grants are funded to encourage and support noninvasive research conducted by keepers in zoo and aquarium settings. The principal investigator **MUST** be a full-time keeper and a member in good standing of AAZK, Inc.

Deadline for application submission for either grant option is **31 May 2000**. Successful grant recipients will be announced at the AAZK National Conference in Columbus, OH. The grant cycle runs from 1 January 2000 to 31 December 2000.

For further information or application packet contact: Jan Reed-Smith, AAZK Grants Committee Chair, John Ball Zoo, 1300 W. Fulton Ave., Grand Rapids, MI 49504; e-mail: jrsotter@iserv.net; Fax - (616) 336-3709. Be certain to specify whether you are requesting information on CPR or Research Grants.

New Rhino Keepers Website Established

At the AAZK Conference held in Houston in 1997, a group of interested keepers held a workshop concerning rhinos and ways of opening up the lines of communication among rhino keepers nation- and worldwide. One of the ideas brought up concerned a web page. Well, the web page has finally arrived and is located at <http://www.geocities.com/rhinokeeper>. It includes a fact sheet for each of the five species, rhino links on the web, a photo page, an area for articles of interest, a bibliography, and a message board. The message board is a moderated forum for information exchange. Some areas are still under construction. Any questions or comments, please contact Denise Wagner, c/o Mammals, San Diego Wild Animal

Park, 15500 San Pasqual Valley Road, Escondido, CA 92027 or at e-mail: rhinokeeper@yahoo.com<

Calendar Honors America's First Female Zoo Vet

Dr. Patricia O'Connor was America's first full-time female zoo veterinarian. She was the staff veterinarian at the Staten Island Zoo in New York from 1942 to 1970. Recently, Staten Island Zoo published a 15-month journal calendar to commemorate her distinguished service. The calendar, produced from a collection of newspaper accounts and photos from the zoo's archives, is available for \$8.00, including mailing. A check or money order may be sent to: Staten Island Zoo, 614 Broadway, Staten Island, NY 10310.

San Antonio Chapter Offers Challenge to Help The Texas Zoo

The Texas Zoo in Victoria, TX needs our help. On 20 October, 1998, the Guadalupe River flooded the facility with more than eight feet of water. The flood destroyed education materials, office records and the library. The flood also destroyed or damaged all the zoo's buildings and exhibits. Total damage was estimated at \$700,000.00. The zoo houses 100 species, all native to Texas. Several endangered species are housed there including margays, ocelots, jaguarundi, coati and red wolves. In order to remain open the Texas Zoo, named by the Texas Legislature in 1984 as "The National Zoo of Texas", needs to cover these losses, as well as lost revenue. If they can raise \$100,000.00, the City of Victoria will match it. A number of fundraising efforts are already underway within the community and the state.

The San Antonio AAZK Chapter has pledged to donate \$200.00 toward the cause. They would like to challenge/encourage other AAZK Chapters to match this donation in an effort to raise the needed amount. The Victoria Zoo is committed to the conservation, education and rehabilitation of native Texas species and is a valuable institution to Texas and the zoo community.

Donations may be sent to: the Texas Zoo Recovery Fund, First Victoria National Bank, 101 South Main St., Victoria, TX 77901.

ATTENTION Chapters! Recharter Packets Have Been Mailed

All AAZK Chapters are reminded that rechartering with the Association on an annual basis is a requirement of being an AAZK Chapter. Such rechartering allows Chapters to function under the nonprofit 501(c)(3) Group Exemption tax umbrella. Recharter packets, which include financial reporting forms, were mailed from the Administrative Office the first week in January.

They will be due back in AAZK Administrative Offices **by 15 February 2000**. Chapters failing to return their recharter materials **by 1 March 2000** will be assessed a late fee of \$100.00 in addition to their regular recharter fee.

The Recharter Packets are sent to the attention of the Chapter President. If you need assistance in filling out the forms or have questions about the recharter process, please feel free to contact Barbara Manspeaker at Administrative Offices in Topeka. Call at 1-800-242-4519 (U.S.) or 1-800-468-1966 (Canada).

An Enrichment Workshop at The French Zookeepers Congress

submitted by Lee Houts, AAZK Enrichment Committee, Chair

The 1st French Zookeepers Congress met November 4-6, 1999 at the Institut Rural de Carquefou La Charneliere to form the French Speaking Zookeepers Association. Many international zookeepers associations, including AAZK, were invited to attend this historic event. Jeannette Beranger (Chair of the International Outreach Committee) and myself were honored to represent the AAZK.

Environmental Enrichment is a new concept in most French zoos and keepers are interested in learning more about it. During the second day of the congress I showed some enrichment video tapes (available for loan from the *Shape of Enrichment*/AAZK Enrichment Video Library), the AAZK Enrichment Notebook , 2nd Edition and discussed the current trends in enrichment in the United States. This was a wonderful opportunity to share information from the AAZK Enrichment Committee with keepers from other countries. We look forward to sharing ideas and information about enrichment with the new French Speaking Zookeepers Association as they work to improve the quality of life for the animals in their care.

AAZK, Inc. Announces New Enrichment Data Transfer Form

The American Association of Zoo Keepers is pleased to announce the release and availability of the Enrichment Data Transfer Form (EDTForm). The purpose of the form is to compliment the Animal Data Transfer Form (ADTForm) which is already in use by the zoological industry.

The EDTForm was conceived and designed by Kayla Grams, co-editor of the "Enrichment Options" column, and William K. Baker, Jr., author of the "Reactions" column, both of which appear monthly in *Animal Keepers' Forum*.

The EDTForm is printed front and back on 8 1/2" x 11" colored 70lb. stock paper. This streamlined format provides ample space for extensive data entries. Entry headings include institutional and specimen information, behavioral history, general background information, naturalistic/exhibit enrichment, food enrichment, artificial enrichment, safety concerns, and a comments section. As enrichment becomes important and more widely utilized within our industry, the EDTForm will allow enrichment history and information to be transferred with an animal when it is shipped to another facility.

The inaugural year 2000 printing of the Enrichment Data Transfer Form was underwritten by the Arizona-Sonora Desert Museum of Tucson, AZ. AAZK, Inc. would like to thank ASDM for their encouragement of and funding for the EDTForm.

Institutional requests for the EDTForm should be sent to AAZK, Inc., 3601 S.W. 29th St., Suite 133, Topeka, KS 66614. As with the ADTForm, these are being provided free to the zoo community as a professional courtesy of AAZK, Inc.

New & Renewing AAZK Professional, Institutional, and Contributing Members

New Professional Members

Ian Ives, **Zoo New England (MA)**;
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Coming Events

Primate Training and Enrichment Workshop

February 16-19, 2000 at the University of Texas M.D. Anderson Cancer Center, Bastrop, TX. For caregivers, keepers, supervisors, veterinarians, and investigators working with nonhuman primates. Goals of the workshop are to provide practical solutions to participants' current primate behavioral management needs. Instruction will focus on operant conditioning, environmental enrichment and problem solving techniques. Instructors: Mollie Bloomsmith, Zoo Atlanta; Steve Schapiro, UTMDACC; and Adam Stone and Gail Laule, Active Environments. Contact Steve Schapiro, Dept. of Veterinary Sciences, UTMDACC, Rt. 2, Box 151-B1, Bastrop, TX 78602; e-mail: sschapro@mdanderson.org; phone: (512) 321-3991; Fax: (512) 332-5208.

Eight Annual Conference of the International Association of Avian Trainers and Educators

February 18-21, 2000. Hosted by the Memphis Zoo, Memphis, TN. For more information, call Kate Friedman at (901) 725-3400 ext. 3800 or e-mail at kfriedman@memphiszoo.org

ARAZPA/ASZK Conference 2000 - March 20-24, 2000 in Gold Coast, Australia. Hosted by Sea World. For further information contact: Aileen Forrester, ARAZPA/ASZK Conference Organizer, Sea World, P. O. Box 190, Surfers Paradise, Qld, 4217, Australia.

7th Western Black Bear Workshop - May 2-4, 2000 in Coos Bay, OR. Hosted by the Oregon Department of Fish and Wildlife. Registration and program information available from: Dave Immell, Oregon Dept. of Fish & Wildlife, 4192 N. Umpqua Hwy., Roseburg, OR 97470; phone (541) 440-3353; Fax (541) 673-0371; e-mail: dave.a.immell@state.or.us

The Apes: Challenges for the 21st Century - May 10-14, 2000 in Chicago, IL. Hosted by The Chicago Zoological Society (Brookfield Zoo). A unique conference focusing on the apes of the world. It is hoped to bring together researchers, zoo personnel and field biologists from all over the world. Keynote speakers include Dr. David Chivers for lesser apes, Dr. Carl van Schaik for orangutans; Dr. Gay Reinartz for bonobos; Dr. Claudia Olejniczak for gorillas; and Dr. Toshisada Nishida for chimpanzees. Plenary speaker is Dr. Russell Mittermeier, President of Conservation International. Conference will include several days of presentations, an icebreaker, round table discussions and a day at the Brookfield Zoo including a silent auction, raffle and a banquet. Immediately following the conference, Lincoln



Park Zoo will host the North American Ape Taxon Advisory Group meetings. Deadline for abstract submissions is **15 February, 2000**. For information on registration/submission of abstracts contact: Brookfield Zoo Ape Conference Planning Committee at (708) 485-0263 ext. 604; Fax (708) 485-3140, or e-mail APECON@BROOKFIELDZOO.org

Fifth International Elephant Research Symposium (June 2-3) and the Second North American Conference on Elephant Foot Care and Pathology (June 4) Hosted by Oregon Zoo For further information contact: Norie Dimeo-Ediger at (503) 220-5763, by fax at (503) 226-0074, or by e-mail : edigern@metro.dst.or.us<

Animal Behavior Society Annual Meeting

August 5-9, 2000 in Atlanta, GA, co-hosted by Morehouse College and Zoo Atlanta. Along with contributed talks and posters, the meetings will include special symposia on "Dispersal Behavior" and invited papers on "Comparison Between Primates and Cetaceans". Plenary speakers include Chris Boake, Hugh Drummond and Dee Boersma. For further info see: <http://www.animalbehavior.org/ABS/Program/>

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ABC'S

Animal Behavior Concerns & Solutions

A Question and Answer Forum for the Zoo Professional

By Diana Guerrero, Independent Behavior Consultant,
Ark Animals of California, San Diego, CA

Topic of the Month: Stripped Opossum (*Dactylopsila trivirgata*)

Question

Our facility has obtained a couple of stripped possums. We would like to introduce the two but have had trouble locating any information on captive breeding, management, and behavior. Do you have any suggestions?

Background

The facility has obtained *Dactylopsila trivirgata*. At the initial time of contact regarding this matter the male was estimated to be five years old while the female was about six months of age. The animals were brought in from a zoo in Taiwan. The male is very tractable and has been used as an ambassador animal. The female was captive raised and can be hand fed.

Currently these animals are being held indoors since anecdotal information alludes to the fact that they prosper indoors (in the particular region of this zoo). Losses have occurred when there has been a broad range of temperatures unless heating is provided.

The animals are currently housed next to each other and have visual and olfactory exposure to each other. In a preliminary attempt to house the animals together, the female was introduced to the male within his territory. The female growled at him and booted him out of his sleeping quarters. She took a dominant role in his enclosure and took possession of his sleeping quarters.

The animals were fed separately. In the daytime they both would just sleep in their respective sleeping areas. The animals were separated due to concern over the female's aggressive manner.

Background

This species is very rare in captivity. In the United States there are at least four institutions that have these animals. Cincinnati has recently acquired this species and the Poznan Zoo (Poland) has been successful in housing this species. One private facility in California reported success in housing this species in pairs but no longer maintains the species.

The striped opossum is found in rainforest habitat, but also in open forest north-eastern Australia. They forage on trees and rotting logs feeding mainly on

arthropods living in dead wood, vine stems, or under bark. They are also known to feed on leaves, fruits, small vertebrates and the honey of native bees. Fleay reports the occasional attack and consumption of mice in captivity.

This species is nocturnal and can be very hyperactive. They tend to have very large ranges in the wild, radio collared animals tracked showed an estimated 12.85 acres to 52.63 acres. They spend lots of time foraging. This animal does not occupy an exclusive home-range area and animals have been observed foraging in fairly close proximity to one another, and on one occasion in the same tree.

This species sleeps in a number of dens throughout their territory in tree hollows. Den sharing was not observed in one study, but pairs were found in the same tree hollow in another. This suggests some degree of sociality. Pairs found sleeping in the same den were two pairs of females and one male-female pair.

There have also been a few observations made of this species associating and vocalizing at dawn and responding to distress calls emitted by conspecifics, which further suggests a sociable predisposition.

In captivity, Poznan Zoo found that the male and females would maintain inter-individual distances. The male would emit distress calls and would avoid the female when she approached him. There were cases when the female attacked the male but no wounds were reported.

Males at Poznan were reported to wake up first and explore, run and climb. Females were noted to move over a wider area. The females also spent more time feeding. Sleeping nests were separate.

Poznan hypothesizes that females are dominant over males and that these animals only bond when sexually receptive. However, Fleay reported that a captive male was aggressive to a female resulting in her death. (The female was described as being delicate.)

Vocalizations for aggression have been described as a hissing and growling while in a defensive posture, (Navarro, personal comment) and as a throaty gurgling shriek resembling the water emptying out of a bath (Fleay). Rand describes a defensive posture with the animal up on its haunches, with widely spread forelegs, wrists turned back and short grunting squeaks.

A California group reports that they have had success with these animals in pairs and that the animals have shared the same nests in (4 x 4 x 6ft) enclosures. Poznan has housed animals in pairs in (3.28 x 2.95 x 6.9ft) and more recently in (11.8 x 14.6 x 9.19ft) enclosures.

Answer

Provide good size enclosure.

The current housing situation is too limited. An enclosure of (4x4x6ft) has already

been found to house pairs successfully at one facility (ten pairs) and you might consider that a minimal area to attempt to integrate the two individuals.

Use scent acclimatization.

Take the bedding material of each animal and exchange it with the other within both of the existing exhibit(s) to increase the olfactory familiarity. These animals should already be fairly familiar with each other. You might consider placing the cages closer together taking advantage of the extra surface area from the width of the cage rather than the depth as you now have it.

Provide environmental complexity.

In setting up your new enclosure, make sure that you provide ample furniture for denning (three or more sites). To avoid altercations and injury you will want to be sure to provide browse, limbs, logs and other materials to occupy and direct their high activity and foraging habits. Marking areas and visual barriers would be helpful to reduce stress. Several (3-4) feeding areas are also suggested.

Introduce male into new enclosure first.

Acclimate the male into the new enclosure before the female since she will probably exhibit the same behaviors as she did previously. Give him a slight advantage and the opportunity to become familiar with the enclosure. This will assist him in finding areas he can retreat or hide in. Give him at least a week or so before you attempt to introduce the female.

Monitor interactions.

For the first few days you will want to monitor the animals and have a plan of distraction or intervention if things get too rough. It would appear that the altercations would be like those already found elsewhere. Since pairs have been kept together successfully it would seem reasonable that you would experience the same sort of vocalizations and minor altercations.

Acknowledgements

Thanks to Kevin Yates, Jackie Navarro, Kath Handasyde, and Hickson Fergusson for their assistance with this evaluation.

Resources of Interest

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About the Author: Since 1978, ARKANIMALS.COM Director, Diana Guerrero has worked professionally in a variety of animal facilities. Attending and completing courses in both animal management and training from institutions both here in the United States and Europe, she has been affiliated with some of the best organizations. She is an alumni of The Moorpark College Exotic Animal Training & Management Program, The Gentle Jungle Animal Affection Training School, The International Training Centre at the Jersey Wildlife Preservation Trust, and special program extensions with Marwell Zoological Park and Kent University. Guerrero started her career in the marine mammal field working as a naturalist, and subsequently became involved with terrestrial animals in zoos and other facilities. Guerrero writes a variety of animal-related columns, including the popular series, Unusual Animal Careers and does seminars nationally. Watch for two of her book projects in the summers of 1999 and 2000! Questions for ABCs should be submitted to Diana directly via e-mail:> arkabc@arkanimals.com< or via regular mail to ARKANIMALS.COM, P.O. Box 1154, Escondido, CA 92033 USA.

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Now Available

Resources for Crisis Management in Zoos and Other Animal Care Facilities

AAZK, Inc. is pleased to announce the availability of its newest publication - *Resources for Crisis Management in Zoos and Other Animal Care Facilities*. This reference work is an anthology of articles by authors from zoo keepers to veterinarians to zoo directors to public relations specialists. The works of 56 authors from these diverse zoological perspectives brings together information and resources for planning a crisis management program for your facility or for augmenting an existing program. The 424-page volume includes a foreword by Sydney J. Butler, Executive Director of the American Zoo and Aquarium Association.

The book's chapters are arranged by the following subject topics: Factors That Influence Crisis Management in a Zoological Setting; Developing An Emergency Preparedness Plan; Emergency Response and Crisis Management Teams; Public Relations and the Crisis Situation; Animal Restraint and Animal Identification Techniques; Dealing with A Crisis Situation (Zoological Crisis, Natural Disasters, and Manmade Disasters); Injury and Death at the Zoo; and Taxon-Specific Crisis Management Protocols. This important work also includes an extensive Appendix and a listing of suppliers and equipment vendors. AAZK has gathered the best of existing articles on crisis management and expanded the text with originally solicited materials on Zoonotic Disease: Risk Appreciation and Biosafety, Meteorological Aspects of Disaster Planning, The Weapons Response to a Zoological Crisis Situation, The Process of Exhibit Design and Construction: How It Affects Crisis Management, etc. The book includes the results of the first-ever North American Crisis Management Survey as well as Case Studies showing how zoos reacted in various crisis situations and what was learned from their experiences. A must for every zoo professional!

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REACTIONS

A Question and Answer Forum for the Zoo Professional on Crisis Management

By William K. Baker, Jr., Zoo Curator
Frank Buck Zoo, Gainesville, TX

Question

What happens when crisis management fails?

Comments

If an individual stays in the zoological profession long enough, it's likely that they will encounter several crisis management situations throughout their career. Unfortunately, the odds are good that at some point there will come a time when the actual management of a crisis event fails.

The reason for failure can be as simplistic as poor judgement by the on-site manager, poor communication, or a lack of teamwork to resolve the situation or a combination of these factors. Regardless, the sad truth is that the attempt at resolution has failed. Now comes the moment of truth in which several factors will have to be addressed by an institution. Respectively in order, these would be staff, media, politics, and animal collection.

Staff

The staff of a zoological institution is more often than not like an extended family. As a result, what impacts one member of the staff has a direct impact on the rest of the staff. This is the critical factor that many zoological facilities often lose sight of with the current trend of employing individuals with no animal experience in management. They fail to see the bond which unites us as professionals who are dedicated to the common goal of conservation. It is therefore critical that the emotions of the staff be taken into consideration when responding to their grief, especially if it involves the injury or death of a staff member.

After the particulars of the event have been established during the review process, a general staff meeting should be held to inform everyone exactly what has happened and how the situation is being addressed. This will prevent conjecture and the spread of rumors. Signs of post-traumatic stress should be expected and facility management should provide counseling to any staff member who requests it. Many municipally-based zoos have an Employee Assistance

Program (EPA) in place and the staff should be reminded that this service is available. Zoo management should be sensitive to individual emotions and the general morale of the staff. Remember, these are the people who make you look good. Also, remember to heighten safety awareness at the facility, as distracted personnel could lead to a second crisis.

Media

Expect the worst. Everything negative which has ever occurred at your facility will be brought to light again to see if it can have any possible bearing or if a pattern is associated with your current situation. Expect disgruntled ex-employees to be interviewed for their "expert" opinion, never mind the circumstances of their departure. Realize that the staff will likely be hounded by the press for their comments or observations while recovering from the incident. Expect to be misquoted and for reporters to show up in restricted animal areas of the facility as they search for the truth. Also, prepare for the inevitable onslaught by the animal rights groups that will once again question the need for captive animals.

The best solution is to hold a press conference in which a written statement is presented in conjunction with a presentation of the facts by a designated spokesperson who will handle the media until the matter is closed. Hopefully, your institution has established a positive relationship with key members of the local media so that you will have access to unbiased reporting. Also, these key media personnel will be familiar with facility operations, jargon, and the staff. It's a relationship well worth cultivating. Also, remember there is no such thing as, "Off the record".

Politics

Probably the most distasteful part of the whole experience is the politics. Expect some level of departmental in-fighting, rivalries, and blame placement from within your institution. Also, expect and anticipate some level of pressure and accountability from senior government officials if your institution is part of a municipality. Realize that there is usually someone in the government who will look for someone to blame and will utilize this for political advantage. This is the point at which the director must take a stand and show clear leadership on behalf of the staff and in defense of the facility. Directors ideally should be like the captain of a ship, responsible for anything which occurs under their command. If anyone is to bear the blame, it's the director. Besides, if there is a USDA or APHIS investigation, let me assure you that it's the director they will come to first.

Animal Collection

If the loss of life within the incident concerned a member or members of the collection then the inevitable problem will be finding replacements. At times like this, other facilities can be a godsend in handling temporary housing for surviving members of an area after a manmade or natural disaster or in helping to locate replacement specimens. We are part of a larger community than just our individual facilities. If specimen(s) were injured, then the same applies. I have yet to find an incident in my career where a veterinary staff has failed to

assist another facility. Remember, they believe in what they're doing, too.

Conclusion

If all of the above sounds pretty bleak in retrospect, then have faith. Because the good news is that your facility will weather the storm and in time, the pain fades. The media and politicians will find new horizons to contemplate. New staff members will join your zoo family bringing fresh ideas and new life - thus keeping the fire burning and hope alive.

Next Month: What happens when crisis management fails? Part 2

If you would like to submit a question for this column or have comments on previously published materials, please send them to: AAZK, Inc., 3601 S.W. 29th St., Suite 133, Topeka, KS 66614 Attn: Reactions/AKF.

(About the Author: Since 1985 Bill has been active in the fields of science, zoology and wildlife management. His education and experience include a B.S. in wildlife management and post-graduate studies in zoology, Lab and Museum Assistant, Shoot Team Leader, ERT Member, Large Mammal Keeper, Senior Keeper, and Zoo Curator at various zoological facilities. His area of research is crisis management in zoological institutions, which draws upon practical experiences and training as a Rescue Diver, Hunter Safety Instructor, NRA Firearms Instructor, and Red Cross CPR/First Aid Instructor.)

Conservation Footnotes . . .

MORE CONDORS FOR AZ: Nine newly arrived California condors "raises the number of giant birds in Arizona skies to 29." According to an Associated Press report, once the new additions are acclimated to their new home near the Grand Canyon, there will be more condors in AZ than were in existence when the reintroduction and recovery program began in the 1980s. The preservation of "prime condor habitat" has been crucial to the recovery effort which now has 49 birds living in the wild in CA and AZ.

--*GREENlines* Issue #1004 11/12/99

POACHING ENDANGERS AFRICAN ELEPHANTS: A story from Knight Ridder/Tribune News Service reports that in the last year poachers, driven by the renewed ivory smuggling trade, have slaughtered over 350 elephants in Zimbabwe alone. Removal of elephants from the endangered list three years ago and the recent limited reopening of the ivory trade have prompted "gangs weilding AK-47 automatic rifles" to go on the poaching rampage. Still, poor countries like Zimbabwe are pushing to have the next CITES meeting open the ivory trade up even more.

--*GREENlines* Issue #1018 12/7/99

Legislative Update

***Compiled by Georgann Johnston
Legislative Advisor
Sacramento, CA***



Federal Grants Exceeding \$22 Million for New Wetlands Projects

The U.S. Fish and Wildlife Service and other federal and state agencies, joined by some private landowners and conservation organizations, have funded 30 separate wetland habitat projects in the U.S., Mexico and Canada. These projects come under the general umbrella of the North American Wetlands Conservation Act.

In the United States, 15 projects are being developed to protect habitat primarily utilized by migratory birds. Eleven additional projects in Canada and four more in Mexico are also being funded in a coordinated effort to secure safe breeding and wintering grounds for birds protected by the Migratory Bird Conservation Act. In the U.S., projects will be undertaken in Arkansas, California, Oregon, Illinois, Iowa, Louisiana, Maryland, Michigan, Missouri, New Hampshire, New Jersey, North Dakota, Texas, Vermont and Washington.

Generally, the projects involve the acquisition of large tracts of land that will then be designated as critical habitat for various avian species. The USFWS will oversee the administration of the projects including fish and wildlife management, enforcement of federal wildlife laws on the lands, and supervision of the distribution of excise taxes on fishing and hunting equipment to state fish and wildlife agencies.

Further details about projects in each of the states listed above can be obtained by contacting Chris Tollefson, USFWS, (202) 208-5634.

Source: USFWS Press Release 6 October 1999

Federal Law Allowing Hunting of Snow Geese Extended

President Clinton has signed legislation reinstating interim population control measures for mid-continent light geese. The legislation was originally implemented last winter and is aimed at reducing the population of mid-continent light geese. The justification for this action is that the USFWS and other federal and state agencies believe that an overabundance of the geese has developed in 24 of the Midwest and Southern states. This

overpopulation has thus created a widening destruction of fragile arctic migratory bird breeding habitat - primarily attributed to the so called "exploding populations" of snow and Ross' geese.

The USFWS is in the process of developing an Environmental Impact Statement that will set out a long-term strategy for dealing with the management of the populations of these two species of geese, but that report is not expected to be completed until the Spring of 2000. Thus, certain congressional representatives became concerned that continued irreparable damage would occur if the USFWS and state fish and wildlife agencies were not allowed to take some action in the interim to control geese populations. Legislation was presented to Congress in early November and was signed into law by President Clinton on 24 November 1999.

Basically, the interim law allows states in the Central and Mississippi Flyways to use the normally prohibited electronic goose calls and unplugged shotguns during the remaining weeks of their light goose season in the upcoming spring, provided that other waterfowl and crane seasons have been closed. Fourteen states implemented all or part of the population control measures last year, contributing to a harvest of mid-continent light geese estimated at more than one million birds during the 1998-1999 season. This number represents a 46 percent increase over the number of birds harvested in the same area during the previous season, when no conservation measures were in place.

Source: USFWS News Release 29 November 1999

Democratic Republic of Congo Agrees to Relocation of Zoo Animals

The government of the Democratic Republic of Congo (DRC) has agreed to allow over 100 animals in the Kinshasa Zoological Gardens to be relocated to safe havens in South Africa and Zambia. More than two-thirds of the Kinshasa Zoo 's animals have died in the past year, primarily because of ongoing civil disturbances and starvation conditions which lead people to look to the Zoo's animals as a source of food. Additionally, a lack of food for the animals themselves has led to the recent death of at least three chimpanzees. Animals still at the zoo include leopards, crocodiles, pythons, antelopes, various primates and some domesticated species.

The International Fund for Animal Welfare and the Bushmeat Project have agreed to mount a mission to airlift the animals to safety. The only stumbling block at this point in time is the need for formal approval by the appropriate DRC governmental agencies. The plan is to move the primates to the Chimfunshi Wildlife Orphanage in Zambia that already houses over 70 chimpanzees in free-range enclosures covering 26 acres. The other animals will be relocated to South African zoos and wildlife parks.

Source: WildNet Africa News Release 22 November 1999

United Nations Lists Three S. African Parks as World Heritage Sites

Over the past month, the United Nations World Heritage Convention committee has named three sites in South Africa as "World Heritage Sites". These include the "Cradle of Humankind" which centers around the cave formations northwest of Krugersdorf - an area that has been a fertile ground for archaeologists and paleoanthropologists searching for fossils relating to the origins of mankind. The two other sites designated by the U.N. are Lake St. Lucia and Robben Island.

Lake St. Lucia is located in LwaaZulu-Natal and is part of an estuarine system that is the largest on the African continent. It is also only one of five lakes worldwide protected by the Living Lakes coalition. The lake provides a home to hundreds of species of fish and other forms of water life and is also a feeding and nesting site for hundreds of bird species. Robben Island is an area off the coast of South Africa that, in past years, was essentially decimated by the testing weapons and bombs. South Africa has attempted to recover the natural habitat over the years and the designation of the island as a World Heritage Site will give South Africa the opportunity to receive financial assistance from the U.N. for management training and technical programs with respect to the preservation of the location.

As a final point, when a location is designated as a World Heritage Site it becomes qualified for assistance from the World Heritage Fund for emergency assistance for repairing damage cased by either adverse human activity or natural disasters.

Source: WildNet Africa News 3 December 1999

Bushmeat Trade a Growing Problem in Many African Countries

"Africa is eating its wildlife and conservationists are trying to slam on the brakes in a desperate bid to save what can be saved" says an article in a recent issue of the *South African Star* newspaper. Roasted monkeys, vacuum-packed elephant steaks, smoked chimpanzee and gorilla limbs, bats, rats, reptiles, and hippos are all available in local markets throughout the African continent. The poor rely on bushmeat for subsistence while many of Africa's top government officials serve up these items as delicacies.

A spokesperson for TRAFFIC (Trade Record Analyses of Fauna and Flora in Commerce, a division of the World Wildlife Fund) says that the bush meat trade in Cameroon, South Africa, Mozambique, Botswana, Malawi, Zambia, Tanzania, Kenya and Zimbabwe has become the biggest threat to species survival. A lack of law enforcement is blamed as the main cause for the continuing problem. For example, just two arrests in 10 years occurred in Kenya for hunting endangered species and neither of those resulted in a conviction.

The governments of most African countries are refusing to address the issue, primarily because they have no viable alternatives to offer their starving populations, says the same TRAFFIC spokesman. "To try and stop it now would require an international outcry."

Source: South African Star Newspaper 8 December 1999

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San Diego Chapter Offers "Animal Buns 2000"

The San Diego AAZK Chapter has once again produced an "Animal Buns" Calendar - this time for the new millennium! The popular calendar, which features some of the "best buns in the business" is available for sale on Amazon.com, in the San Diego Zoo and Wild Animal Park gift shops, and through the Animal Buns website at www.animalbuns.bigstep.com<

The Animal Buns Calendar is also available for purchase by AAZK Chapters to use as a fundraiser. Any Chapter interested in this possibility should call the San Diego AAZK Chapter hot line at (619) 231-1515 ext. 4672 and leave a message. A member of the San Diego Chapter will get back to you with details on such a purchase.

Chapter News Notes

Milwaukee County Zoo Chapter

In October, the Milwaukee County Zoo AAZK Chapter held its annual Spaghetti Dinner. Thanks to the hard work of keepers and volunteers, the event was a success with \$1455.00 being raised from the event, \$655.00 of which was donated to the International Crane Foundation based in Baraboo, WI. The funds will be used to help with the creation of a new migration site in central Wisconsin for Whooping Cranes. The rest of the money goes towards our Chapter's operating expenses.

During our zoo's Halloween events, our Chapter ran a booth where we sold many delicious caramel apples. This new fundraising event turned out to be a success and we hope to use it at future Milwaukee County Zoo events.

--Earl Conteh-Morgan, Liaison

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ORDER NOW !



*By Gretchen Ziegler, Sequoia Park Zoo
and Jan Roletto, Utah's Hogle Zoo*

All submissions for this month's column were taken from the enrichment listserve, with permission from the authors. For information about joining the list serve, see the highlighted information at the end of this column.

Snake Enrichment

We have used shredded paper piles, as well as wet moss for them to check out. We also use other snake sheds and change branches and other furniture as often as we can.

*--Brandy Sprunger, Keeper
Columbian Park Zoo, Layfayette, IN*

We often give snakes paper towel or mailing tubes to slither into. These are free and disposable. They can be placed in with rodents or other animals for a few minutes to be scented. Our smaller snakes (kingsnakes, cornsnakes, etc) will curl up in large, glass mayonnaise bottles that have been placed on their sides. They seem to feel hidden even though it is glass, and easily slip out of the jar by just inverting and slightly lifting it. We also leave scent trails by dragging a dead rodent, letting a live one run around a bit, or dragging fresh herbs (don't do this on days when you are going to use a snake for a program, they might go into "hunting mode" and not be as tractable). If you have a secure outdoor area, letting them move around on a variety of surfaces and substrates (sand, grass, rocks, logs with rough bark, garden soil, etc) can be beneficial. You might be able to have a shallow pool where they can actually swim. Try providing choices in their temperature range instead of a constant window (80-83 degrees). If you have some very warm basking areas (make sure they are not in direct contact with the heating element) and some very cool areas, the snake can choose to spend time within both extremes to regulate its own body temperature. This may increase its activity level by moving in and around those temperature extremes.

*--Lee Houts, Keeper
Folsom City Zoo, Folsom, CA*

Try soaking rats (dead of course) in warm water. Use the rat scented water in a spray bottle and you can scent areas of the snake exhibit.

--Reptile Staff

Utah's Hogle Zoo, Salt Lake City, UT

We have two corn snakes in our wildlife education program and try lots of different things for them. We vary their substrate from time to time. We usually use newspaper, but we will also offer wood chips, dirt, sand, towels/shirts, dried leaves, grass, etc. We also give them cardboard boxes to hide in (cereal-type), cardboard tubes, stuffed animals, baby toys, woven reptile tubes, and hollow log pieces. These items are rotated regularly to retain novelty. We sometimes offer our snakes sheds and bedding materials from our other animals (particularly our flying squirrels). We handle our snakes daily for shows and have never had a problem with a defensive response from offering these "prey-smelling" items.

To increase the available area in our tanks we sometimes use plastic coated metal shelves to add space. At one end of the tank is an undertank heater (usually the same side as the water, since our snakes don't seem to enjoy actually lying on the heater area), and we have a tri-light fixture above the screen top. On one side there are two daylight heat bulbs (we use one in the summer, two in the winter), and at the other end is a smaller watt night-light heat bulb.

--Heidi Hellmuth, Curator

*Ken Weldon, Christine Anderson, Sarah Mello, Training Staff
Loon Mountain Wildlife Theater, Lincoln, NH*

My snake at home seems to enjoy change. We give her something new to explore every week: pinecones, plastic cups, plants (she does destroy them by digging), rocks, browse, wadded up newspaper to bury herself under, small milk crates for weaving through - anything and everything we feel is safe and either disinfectable or disposable. We rotate these items and have been rewarded with a much more active snake who does interesting things. She also has a suspended series of PVC tubes to crawl through - we felt it increased her vertical space and she spends at least half of her time there.

--Jennifer Carney

Disney's Animal Kingdom, Orlando, FL

(Ideas appearing in this column have not necessarily been tested by the editors for safety considerations. Always think ahead and use good judgement when trying new ideas. Eds.)

You are invited to submit material for the Enrichment Options Column. This might include recipes, toys, puzzle feeders, olfactory enrichment ideas, etc. Drawings and photos of enrichments are encouraged. Send to: AKF/Enrichment Options, 3601 S.W. 29th St., Suite 133, Topeka, KS 66614.

A future column will be dedicated to Enrichment Graphics used throughout your zoo. Please send in photos and diagrams illustrating how enrichment is interpreted to the public. The deadline for submissions for this column topic is 20 January 2000.

Visit the new AAZK Enrichment Website - www.enrich.org/aazk or to join the Enrichment Listserve by e-mail jackbell@humboldt1.com

An archive of past postings can be viewed at www.caza.org/enrich.

Enrichment Weekend at Beardsley Zoo

submitted by Christine Clark, Zoo Educator, Beardsley Zoo, Bridgeport, CT

On 16-17 October 1999, the Beardsley Zoo held its first Enrichment Weekend. This event came from a brainstorming meeting of our Enrichment Committee. We felt visitors would be interested in learning more about what enrichment is, why do it and how they can enrich their own pets' lives.

The event ran from 11:00 a.m. to 2:00 p.m. each day. As visitors walked around the Zoo they saw different types of enrichment everywhere. All of our exhibits had special "toys" for the animals. Keeper talks, explaining different types of enrichment, were scheduled every half hour at various exhibits. Visitors were able to help us make enrichment items for our animals. They helped make a paper maché pinata for our tigers using a large mold (see May 1999 AKF, pgs. 177-178 for instructions on how to make a pinata). They could also make scent bags using burlap or paper bags and wool, butcher paper, scented oils, herbs and spices.

To those visitors who wanted to enrich the lives of their wildlife at their own home, we offered two types of bird and squirrel feeder crafts. Visitors could take paper towel rolls, smear them with peanut butter and roll them in oats and seeds or, string licorice whips with cereal. Two coloring sheets were provided for younger children that had information on enrichment they could make for cats, dogs, fish, birds, rabbits and guinea pigs. We also raffled off a basket of pet goodies to raise money for our enrichment fund.

Visitors loved the event and really enjoyed learning why they always see "all that junk" in the animals' exhibits. The weekend was so successful we are planning on making this a yearly event.

A Brief Note on Identifying Reptiles and Amphibians in Live Collections

By R. Michael Burger
Reptile and Amphibian Keeper
San Antonio Zoological Gardens & Aquarium

Identification of individual reptiles and amphibians is often mandatory for the success of behavioral studies, security, and management programs. Identifying individual specimens can be difficult however. A number of identification methods are mentioned in literature and include scale-clipping (Blanchard and Finster, 1933), scale anomalies (Shine et al., 1988), toe-clipping (Martof, 1953), branding (Weary, 1969; Lewke and Stroud, 1974; Thomas, 1975), coloring (Ireland, 1973; 1991), tattooing (Woodbury, 1948), banding (Emlen, 1968), radiotelemetry (Fitch and Shirer, 1971), and tagging (Pendleton, 1956; Hirth, 1966; Pough, 1970; Hudnall, 1982; Layfield et al., 1988; for a review, see Ferner, 1979). While potentially useful in field situations, many of these techniques are invasive and/or may permanently disfigure potential display animals. The following offers a few suggestions for identifying reptiles and amphibians in live collections.

A widely used method for identifying display specimens in zoological collections involves the use of Passive Integrated Transponder (PIT) tags. The tag implants are small in size (11mm x 2.2mm), hermetically sealed in biocompatible glass, cause little disfigurement if implanted in an appropriate area, and can be used in a wide range of animals (Vogelnest, 1994). A subcutaneous or intracoelomic site is usually chosen for implantation of the PIT-tag. Identification can be made by passing a handheld electromagnetic scanner over the animal, therefore no handling is required. Although this method is invasive, one study found no significant short-term effects of PIT-tag use on the growth or survival of metamorphic marbled salamanders (*Ambystoma opacum*) (Ott and Scott, 1999).

Visual observation is probably the most practical means for identification in reptiles and amphibians. Differences in size, shape, coloration or pattern are often obvious. Drawings (Figure 1) can be immensely helpful for identification of heavily patterned species such as dendrobatid frogs where significant variation exists among individual specimens (see Zimmerman, 1986, pg 182). Templates can be made to suggest a general body outline and patterns can be rendered by hand (Figure 1). Because many reptiles and amphibians experience ontogenetic pattern changes, templates are only recommended in adult specimens. An alternative to this method is to count spots on a defined area of a specimen's body as suggested by Loafman (1991). While he used this technique with spotted salamanders (*Ambystoma maculatum*), it would also be valuable for use with other reptiles and amphibians.

The use of a photocopying machine offers another practical means for specimen identification. Particularly useful in snakes with defined but variable head

patterns, a shed skin (which still holds a faint pattern) can be photocopied directly onto a feed card.



ISIS #990421



ISIS #990422

Figure 1. Many amphibians such as azure dart frogs (*Dendrobates azureus*) can be identified by variable patterns. Templates can be made for stenciling a general outline and patterns can be rendered by hand.

Photography offers one of the better ways for identifying individual specimens. Variations in color, pattern, and body shape can be accurately recorded for identification purposes. Digital photography has advantages over traditional photography methods. Negating the cost/time of film and development, digital pictures may be taken and immediately assigned ISIS numbers for use in a computer database by the herpetology department, animal registrar, veterinarian, etc. Potential acquisitions can then be viewed by another facility via electronic means (i.e. internet). With appropriate software, pictures may be lightened, sharpened, color corrected, cropped, enlarged, etc. Multiple images (with accompanying ISIS numbers) can also be printed onto white mailing labels ("stickers") and directly applied onto individual specimen/feed cards for identification purposes.



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USFW Releases New Guidance for Listing Endangered Species

The U.S. Fish and Wildlife Service finalized new guidelines today for assigning priorities for listing endangered and threatened species under the Endangered Species Act for fiscal years 1999 and 2000. This guidance allows the Fish and Wildlife Service to allocate funds and resources to the species that are in the greatest need of protection.

“This new guidance will help us continue to set priorities so that we are addressing the needs of those species that are most imperiled first,” notes Jamie Rappaport Clark, Director of the Fish and Wildlife Service.

In an effort to continue to address the needs of species facing the greatest threats, the new priority guidance establishes the following priorities for listing endangered species:

- Priority One: Emergency listings for species facing a significant risk to their well-being
- Priority Two: Final decisions on pending proposed listings
- Priority Three: Determining whether candidate species should be listed
- Priority Four: Findings on petitions to add species to the list and petitions to delist or reclassify species

Critical habitat actions such as determining whether it is prudent to designate critical habitat, proposing to designate critical habitat, and making final designations of critical habitat will no longer fall under this guidance. The Service expects to complete a number of critical habitat actions during FY 2000 which will be funded separately from other listing actions.

In April 1995, Congress imposed a one year moratorium on listing species. When the moratorium was lifted, the Service faced a backlog of 243 proposed species awaiting final determinations. Once the moratorium was lifted in April 1996, the Service created a priority approach to dealing with the listing process that would address the needs of the most vulnerable species first. Final listing determinations have now been made for all of the 243 proposed species that made up the moratorium backlog. While the moratorium backlog of proposed species has been eliminated, the Service has proposed additional species for listing since the end of the moratorium. Today, only 56 species proposed for listing await a final determination. Since the moratorium was lifted and listing priority guidance was employed, 273 final determinations have been completed, including 245 final listings, and 28 withdrawals of proposed rules. The total number of endangered and threatened species in the United States is now 1197.

The Service published the new Listing Priority Guidance in the October 22, 1999 *Federal Register*.

Breeding Records on the South American Sea Lions (*Otaria flavescens*) at Colchester Zoo, England

By
Michelle Pywell, Senior Keeper
Colchester Zoo, Witham, Essex, England

Colchester Zoo has 1.2 South American sea lions (*Otaria flavescens*). They are as follows:

House Name	Sex	Birth Date	Age 1/1/00
Pat	Male	31/12/82	18y 2m 1d
Nia	Female	06/11/82	18y 2m 5d
Agola	Female	01/01/90	10y 2m 0d

We keep detailed daily records in an A4 diary on the behavior of the sea lions. These are very helpful to find patterns of behavior, times of oestrus and partition. This provides invaluable information for new keepers to study. I feel that it is very important that this data should be shared with other collections as this may:

- Help us learn more about breeding sea lions in captivity
- Just confirm what some keepers already know
- Be used as a comparison to other collections
- Be interesting to keepers who would like to learn more about how sea lions “Do It” using plain English without the technical jargon!

Our sea lions are trained through positive reinforcement. We do 3-4 displays to visitors each day enabling us to interact with the sea lions and enrich their lives. They enjoy taking part and are always eager to participate unless it is their “breeding season”!

During breeding season, they suddenly show no interest in their keepers, fish or visitors - just each other. As Nia enters oestrus, Agola steers clear of Pat who

becomes very aggressive towards her if she gets too close. So Agola and I carry on with the displays, giving Pat a wide berth. Safety First! I do not interfere between Pat and Nia!

Because Pat also becomes aggressive towards his keepers during this time, it is very important to know his warning signals. This way I know when to act submissive and when it is safe to stand my ground. This experience I've gained through watching Agola's body language in response to receiving an aggressive look/movement from Pat.

Agola backs away from Pat, avoids eye contact and when Pat no longer feels Agola is a threat, he goes back to Nia and Agola pretends to groom herself until he is gone. She then runs to the safety of the pool. She never attempts to run away when he is being aggressive towards her or she would undoubtedly be injured.

I've now got this pattern down to a fine art so I can still interact with them, do displays, pool maintenance, etc. without Pat thinking that I will interfere. This has taken the best part of five years to achieve.

When Nia is in oestrus she waves her hindflippers in Pat's whiskers and bobs about the surface of the pool. Pat responds by sniffing her valva and starts "huffing", a sort of "orh, orh, orh" in quick succession.

Pat stays very close to Nia throughout this time, circling her or pressing against her. If Nia tries to create a distance, Pat roars and Nia keeps still. If she does make a run for it, he pushes her against the wall and grabs her around the neck. He can herd her wherever he wants. When food is thrown to them they often refuse to eat. This behavior lasts for up to three weeks. Copulation takes place after a couple of days. Copulation sometimes occurs in the pool, but more often on land. This often keeps Nia on land for days at a time.

Copulation lasts for up to 15 minutes each time. During this time a foul-smelling brown substance is found around them. Pat sucks up Nia's urine. When Agola is in oestrus Pat is too interested in Nia to even notice. Agola rubs herself, curls into a ball, and her vulva is red. She tries to get close to Pat, then appears to bottle out and runs away! Her appetite stays the same. When Pat does approach her she stays very still as he sniffs her, does his mating call, and then pushes Agola into a corner where the copulation takes place. Agola freezes and is very shaken up after copulation. Pat's courtship behavior is very different between the two females.

On the following page is a chart that summarizes Pat and Nia's breeding season. This data was taken from 1998, although it is much the same each year.

Summary - As you can see, it lasts 12 days, with four days of fasting. Copulation took place on land each time it was observed. They showed very little interest in the public displays. Pat "huffed" throughout the 12-day period.

Behaviour														
Huffing	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Together In pool	#*	#	*		#	*				#*				
Together On land			#*		#*	#*	#*	#*		#*	#*	#*		
Copulation			#*			#*		#*						
Food Ate	#*	#*			#*	#*	#*	#*		#*	#*	#*	#*	#*
Not Close												#*	#*	
Working in displays		#*							#*				#*	#*
	1	2	3	4	5	6	7	8	9	10	11	12	13	14

Days that Nia is in season

Below is a chart showing gestation periods.

Name	copulation	partuition	Gestation period	in oestrus
Nia	6/5/98	9/7/99	14m 3d	14/8/99
Agola	20/5/98	15/7/99	13m 26d	28/8/99

Copulation date was taken from the last time we observed copulation take place. Although we did not separate the sexes after this date, it seems very unlikely that copulation took place after this time.

The South American sea lion's gestation period is thought to be 11.75 months (Riedman, 1990). So why was Nia's and Agola's gestation period so long? With the help of other keepers, we can work together and find this out. But if anyone knows, please let us know.

This is what makes life so interesting in our field - we know so little about exotic animals. We can study, observe and find out important information to help expand our knowledge and understanding.

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Contact Information: Michelle Pywell, 12 Guithavon Road, Witham, Essex, CM8 1HD England

U.S. Encourages Worldwide Sustainable Trade in Animals and Plants As It Unveils Final Submission for April 2000 CITES Conference

The USFWS is calling for global attention to the impacts of unsustained trade in marine species, reptiles, amphibians and plants as it submits its final proposals and papers to the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). CITES is an international agreement designed to control and regulate global trade in certain wild animals and plants that are or may become threatened with extinction due to commercial trade.

These proposals and papers will be considered during the 11th meeting of the Conference of the Parties (COP11) to CITES in Nairobi, Kenya, in April 2000. Currently, 146 nations including the U.S. belong to CITES. Members meet approximately every two years to discuss improvement in trade protections for wildlife.

A CITES-regulated species may be included in one of three appendices to the Convention. Any listing of a species in either Appendix I or II requires approval by two thirds of the CITES parties. Appendix I includes species where it is determined that any commercial trade is detrimental to the survival of the species. Therefore, no commercial trade is allowed in Appendix I species. Noncommercial trade in such species is allowed if it does not jeopardize the species' survival in the wild. Permits are required for the exportation and importation of Appendix I species.

Appendix II includes species where it has been determined that commercial trade may be detrimental to the survival of the species, and such trade is strictly regulated through the use of export permits. Appendix III includes species where there is some question as to the impact of commercial trade. Permits are used to monitor trade in native species. Any member may place a native species on Appendix III.

In addition to proposals the United States itself is submitting, there are several it is co-sponsoring with other countries. For example, the U.S. is joining with Australia, Bulgaria, Kenya, Georgia, India, Nepal and Madagascar to propose or discuss protection for species such as sharks, tortoises, dolphins, tarantulas and musk deer.

Marine Species

Whale Sharks and Great White Sharks

The future of many of the world's best known marine species is uncertain due to commercial exploitation. The impact of this trade upon the world's shark populations has been especially devastating. Sharks are more vulnerable than most other fish because of their delayed maturity, rate of reproduction, and their longevity. To help ensure the health of wild sharks, the U.S. is proposing two species for CITES protection. The whale shark, the world's largest fish, is proposed for listing in Appendix II. Great White sharks are exploited worldwide to supply the Asian medicinal and food market and the curio trade. Shark teeth and jaws command high prices in the Asian marketplace. Longline and gillnet fishing also contribute to this grave situation. The U.S. and Australia are co-sponsoring a proposal to include this species in Appendix I.

The U.S. and Australia are also seeking a discussion on the conservation of, and trade in

the more than 200 types of seahorses and related species. Seahorse populations have declined worldwide, but more complete information is needed about their status before moving forward with a proposal to add seahorses to a specific appendix.

Bottlenose Dolphin

The U.S. has also worked with the country of Georgia in gathering information on the Black Sea/Sea of Azov population of the Bottlenose dolphin. This population is isolated from other Bottlenose dolphins found in the Mediterranean Sea and other waters. The dolphin's habitat is highly contaminated by sewage and industrial has been a decrease in the dolphins' prey species due to overfishing. Trade in this species is primarily for live animals for exhibition. Currently included in Appendix II, the continuing international trade has led the U.S. and Georgia to propose including this rare species in Appendix I.

Whales

To strengthen the global conservation and manage whale populations, the U. S. is submitting a discussion paper which calls for continued cooperation between the CITES parties and the International Whaling Commission (IWC). The IWC is responsible for the conservation and management of whales; CITES regulates whales and whale products in international trade.

Reptiles and Amphibians

While environmental factors recently have been highly publicized as causing declines in amphibians around the world, overharvest for human food and the pet trade is contributing to this decline. This trade impacts both U.S. and foreign species. Therefore, the U.S. is proposing several of these species for protection against trade. According to statistics collected by the Service, in 1997 the United States imported a million live reptiles worth more than \$7 million and exported 9.7 million valued at more than \$13.2 million.

Timber Rattlesnake

The timber rattlesnake, a U.S. species, is proposed for listing in Appendix II. Although found in 31 states including New Hampshire, Minnesota, Texas and Florida, the species has declined greatly throughout much of its range. In most northern states only remnant populations survive and the timber rattlesnake has completely disappeared from Maine and Rhode Island. Habitat loss, highway mortality, intentional killing and collection for the domestic and international pet trade, for meat and for the skin trade, are taking their toll on wild populations. In addition, this snake does not breed until eight or nine years of age and may produce young only every two or three years.

Crocodilians

In addition to its proposals to protect certain reptiles and amphibians, the U.S. is asking the CITES parties to make it easier to move samples of crocodilian skins across borders for use in trade shows. If approved, this would help foster sustainable use of American alligators and some other well-managed species of caimans and crocodiles from Latin America, Africa and Asia.

Mantella Frogs

Mantella frogs are found only on the island of Madagascar, located off Africa's east coast. These colorful frogs are popular as pets and are heavily collected. In addition, wild populations continue to decline due to habitat loss and deforestation. The U.S., the Netherlands and Madagascar are seeking protection for all of the approximately 15 unlisted Mantella species.

Sonoran Green Toad

The Sonoran green toad occurs in portions of Arizona and Sonora, Mexico and has been listed in Appendix II since 1975. Today its population is stable and much of its habitat is located in protected areas such as national monuments and military lands. In addition, there is little or no international trade in this amphibian. Therefore, the U.S. does not believe it needs to receive CITES protection and is proposing to delete it from Appendix II listing.

Spotted Turtle

The spotted turtle is another North American species which the U.S. considers to be in need of Appendix II protection. Native to southern Ontario, Canada, and in the Northeast, mid-Atlantic, Southeast and Upper Midwest U.S., the species' survival is threatened by over-collection; habitat fragmentation, alteration, and destruction; as well as road mortality. Human population growth and development, the disappearance of wetlands and pollution are some of the factors contributing to population declines. From 1995 through 1997, substantial numbers of spotted turtles were exported from the United States.

Southeast Asian Box Turtle

The U. S. and Germany are co-sponsoring a proposal to include the nine species of Southeast Asian box turtles in Appendix II. Many of these species are heavily exploited for food throughout southeast Asia. After consulting with other CITES countries where the turtles are found such as Viet Nam, Nepal, Cambodia, China and Bangladesh, it was determined that threats to the survival of these turtles warranted their protection.

Pancake Tortoise

Along with Kenya, the U.S. is seeking to transfer the Pancake tortoise from Appendix II to Appendix I. Native to Kenya and Tanzania, this tortoise's habitat is limited to thorn-scrub and savannah areas with rock crevices and outcroppings. The species was listed in Appendix II in 1975 and in 1981 Kenya banned its trade. Immediately following the ban, there was a marked increase in exports from Tanzania. Recently pancake tortoise numbers have become depleted in much of its Tanzanian range. Increasing collection, the turtle's low reproductive rate and its habitat requirements all factor into this decline.

Spiders

Eastern Hemisphere Tarantulas

Tarantulas are much desired as pets. When Western Hemisphere tarantulas were listed in Appendix II in 1994, the commercial pet trade shifted to the 11 known species of Eastern Hemisphere tarantulas. Found only in the forests of southern India and Sri Lanka, the low reproductive rate cannot keep up with the current demand for pets. Captive breeding is rarely successful and not enough spiders are produced to satisfy the trade. In addition, their native forest habitat is disappearing because of deforestation. Sri Lanka and the U.S. believe that all Eastern hemisphere tarantula species also should be included in Appendix II.

Mammals

Asian Pangolins

Working together, Sri Lanka, India, Nepal and the U.S. are asking that the three species of Asian pangolins, the Chinese, Indian and Malay, be transferred from Appendix II to Appendix I because these mammals, which resemble anteaters, are heavily traded and little information is available on the health of wild populations. Their scales are used in

traditional Asian medicines and their skins are used for boots. Pangolins are also traded for food.

Musk Deer

The U.S. is proposing that all musk deer species currently listed in Appendix II be transferred to Appendix I. Ranging from eastern Siberia through Manchuria and central China to regions of Afghanistan, Pakistan, and India, this species continues to dwindle due to widespread poaching for international trade. Moreover, changes in and loss of its forest and scrub-forest habitat present serious threats to the deer's survival. The U.S. is co-sponsoring this proposal with India and Nepal.

Birds

North American Gyrfalcon

The gyrfalcon is a raptor found in the arctic and subarctic regions of Alaska, Canada, Greenland, Iceland, Europe and Asia. The North American population of the gyrfalcon has remained stable since surveys began more than 20 years ago. There is no evidence that this particular population has ever been threatened due to habitat loss, nest robbing or trade. The U.S. is proposing to transfer the North American gyrfalcon from Appendix I to Appendix II with a special restriction. In the past, European countries have been concerned about enforcement problems for their native gyrfalcon populations if the North American raptors were transferred to Appendix II. Although the U.S. has determined that trade in the North American bird does not appear to pose a significant threat to this species, it is asking for a provision which will continue the ban on trade in all wild gyrfalcons.

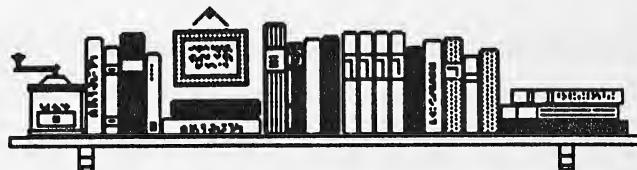
For copies of all *Federal Register* notices and to learn more about CITES, U.S. submissions, what other countries are proposing, fact sheets, COP11 updates and the latest news, check the Service's internet address: <<<http://international.fws.gov/cop11/cop11.html>.>>

AAZV Issues Call for Papers

The American Association of Zoo Veterinarians will hold its annual conference in New Orleans, LA Sept. 17-21, 2000, in conjunction with the International Association of Aquatic Animal Medicine. Joint program sessions include Environmental Issues/Facilities Design, Conservation Medicine/Reports from the Field, Toxicology/Pharmacology/Therapeutics, What's New in Diagnosis?, Nutrition, and Reptiles/Amphibians. AAZV concurrent sessions will be Avian, Large Mammals/Ungulates, Small Mammals/Carnivores/Primates, Case Reports/Practice Tips, Innovations in Training at Home and Abroad, New and Improved Surgical Techniques, and Preventive Medicine/Group and Herd Health. IAAAM concurrent sessions will be: Infectious Disease, Immunology/Clinical Pathology, Case Reports, and Pathology. There will be a poster session, veterinary student paper competitions, and workshops/wet labs.

Those wishing to present a paper, contact either Scott Citino or Suzanne Kennedy-Stoskopf by **15 February 2000** to obtain information on contacting the appropriate session chairperson. Scott Citino, DVM, Conference Program Co-Chair, White Oaks Plantation, 3823 Owens Rd., Yulee, FL 32097-2145; phone - ((904) 225-3387; Fax - (904) 225-3387; e-mail - scottc@wogilman.com< Suzanne Kennedy-Stoskopf, DVM, Conference Program Co-Chair, NCSU Pylon Research Laboratories, 617 Hutton St., Raleigh, NC 27606; Phone - (919) 515-8111; Fax - (919) 515-4237; e-mail - Suzanne_Stoskopf@ncsu.edu<

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Book

Review

Monitors, The Biology of Varanid Lizards (Second Edition 1999)

Written by Dennis King and Brian Green

Illustrations by Frank Knight, Keith Newgrain and Jo Eberhard

Published by Krieger Publishing Co.

1725 Krieger Dr., Malabar FL 32950-3323 USA

*Review by Paul Kmiotek, Wild Animal Keeper
Queens Zoo (WCS), Queens, NY*

Six or seven years ago you could go to your local Barnes and Noble magazine rack and if you were lucky you might find one reptile periodical among the dozens of fuzzy animal ones. Today I subscribe to five and that doesn't even count the couple that came and went (along with my hard earned money) in a matter of months. Herpetology, as a hobby, has exploded in the last few years. As would be expected in the midst of any craze, profit minded companies have been producing product, particularly books, with the frequency of pinky mice. Unfortunately most are of the quality that such quantities imply, a lot of pretty, glossy pictures and not much else.

Fortunately, this isn't one of those books. It's actually the second edition of a book originally printed in 1993. The authors, monitor experts Dennis King and Brian Green, are both Australian, so, not surprisingly, the general focus of the book is on Australian monitors and specifically, Rosenberg's monitor (*Varanus rosenbergi*). This is apparently the most studied monitor in Australia. The authors use this species as a sort of "typical" monitor then point out differences or similarities to other species where appropriate. The monitor family is so diverse, ranging from 10" long dwarf monitors to 10 ft. long Komodo dragons, and living in habitats as varied as deserts, mangroves, trees, and underground, that this attempt to generalize is not always successful. This is not to imply that the book is not useful. For the most part the information contained in it is excellent. The book just has such an Australian bias (and understandably so, 30 of the 50 monitor species are from there) that the authors might as well have limited the scope of the book to Australia.

While it might not be the kind of book you read cover to cover - the chapter on proposed taxonomic revisions is not likely to keep many readers up all night - several of the eleven chapters would be of interest to most monitor owners and enthusiasts. Among them are the chapters on feeding, breeding, general behavior, thermal biology, and parasites. Also of particular interest is the chapter on conservation and management. It examines, briefly, the monitor's status and conservation efforts on its behalf, in Australia, Asia and Africa. The book also includes a section on suggested reading, an index, and 12 pages containing 21 excellent color plates. There are also a number of graphs, charts, tables, and illustrations scattered throughout the book.

For the price (about \$25 for the paperback) this book is an affordable, and useful, addition to every monitor lovers library.

Wildlife Conservation, Zoos and Animal Protection: A Strategic Analysis

Editor, Andrew N. Rowan

Published in 1995

White Oak Conservation Center

3823 Owens Road, Yulee, Florida 32097

*Review by Diana Guerrero, Director
Ark Animals, Escondido, CA*

This publication is the proceedings of a work shop held at the White Oak Conservation Center in the spring of 1994. A wide variety of zoos, animal protection groups, and academic institutions participated in this event co-sponsored by the Howard Gilman Foundation and the Pew Charitable Trusts.

There are seven different main topics presented and each is followed by the transcript of the discussion prompted by the presentation. There was an interesting sampling of papers touching into different areas regarding the definition of wild, captive and tame animals, preserving individuals versus conserving populations, the well-being of animals in zoos and in the wild, future concerns and the protection of animals.

My favorite article was by Marc Bekoff (University of Colorado). It is titled "Naturalizing and Individualizing Animal Well-Being and Animal Minds: An Ethologist's Naivete Exposed?" The content ventures into animal cognition, naturalizing, individualizing, animal welfare, well-being, and other related topics.

In addition to the numerous references cited and the interesting discussions, this volume gives you a peak into the areas of common ground between the different groups. Another plus is the appendix which looks at the history and attitudes toward zoos, areas of recommendations for both the animal protection and zoo communities, and recommendations for future strategies. If you are stimulated by conference proceedings this one would be of interest.



AAZK Has Moved !!!

Effective NOW our address is:

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Institutions wishing to advertise employment opportunities are asked to send pertinent data by the 10th of each month to: Opportunity Knocks/AKF, 3601 S.W. 29th St., Suite 133, Topeka, KS 66614. Please include closing date for positions available and when setting these dates keep in mind that because of bulk-mail, most readers do not receive the AKF until the middle of the month or later. There is no charge for this service and fax listings of positions which become available close to deadline are accepted. Our fax is (785) 273-1980. Please Note NEW ADDRESS for AAZK!

The following positions are available at the Birmingham Zoo. To apply send a letter and resumé by 31 January 2000 to: Marcia Riedmiller, Curator of Mammals, Birmingham Zoo, Inc., 2630 Cahaba Road, Birmingham, AL 35223. E-mail:mrriedmiller@birminghamzoo.com< EOE.

PACHYDERM KEEPERS (2)...seeking keepers with operant conditioning and training experience to work with elephants in protected contact. Will also work and train hippo and white rhino. Requires high school diploma, college graduate preferred. Excellent benefits, salary \$16,900.00 to \$25,000.00.

KEEPERS...seeking keepers to work in Hoofstock (2) and Predators (2). Positions available for team-oriented individuals with at least one (1) year experience. Experience with training and enrichment a plus. Excellent benefits, salary \$16,900.00 to \$25,000.00.

HOSPITAL ATTENDANT (KEEPER)...full-time position for care of hospitalized and quarantined zoo animals; requires high school diploma and minimum of two (2) years keeper experience, preferably with diverse collection to include birds, mammals, and reptiles, etc. Cleanliness, efficiency, and quiet work habits important; hand-rearing experience is an asset; must be able to improvise situations to fit needs of animals on short notice; must work effectively around on-going medical procedures, including emergency and "autopsy" events; will report directly to staff veterinarian as supervisor, and work with one other keeper in department. Salary entry \$20,600.00 annually, along with excellent benefits package. Send two (2) copies of resumé, including social security number and proof of education to: Chriss Miller, DVM, Miami Metrozoo, 12400 SW 152nd St., Miami, FL 33177; phone: (305) 253-5050. Resumé deadline is **28 January 2000**.

BIRD KEEPR...requires a high school diploma/equivalent and one (1) years experience in animal care. Responsible for all aspects of the daily care and husbandry of a diverse collection of birds, exhibit maintenance, animal observations, and record keeping. Will assist with conservation and education programs. Must have good communication/organization skills and the ability to work well with others in a team. Prior avian experience preferred. Send letter/resumé to: Lee Schoen, Curator of Birds, Houston Zoological Gardens, 1513 N. MacGregor, Houston, TX 77030.

The following positions are available at The Living Desert Wildlife and Botanical Park in Palm Desert, CA. We are currently accepting applications for possible animal keeper and trainer/presenter positions available n the future. The Living Desert displays animals from the deserts of North America and Africa. The collection is primarily carnivores and ungulates. Visit our website at www.livingdesert.org for more information. Any animal positions at the Living Desert include salary commensurate with experience and benefits. Send letter/resumé/references to: The Living Desert, 47-900 Portola Ave., Palm Desert, CA 92260 ATTN: Amy Roberts, Animal Collections Manager.

ANIMAL KEEPER...responsible for all aspects of animal care and display maintenance. will work with a diverse collection of desert animals. Must be an energetic and highly-

motivated team player. Prefer degree, paid exotic animal experience. Experience can substitute for degree. Knowledge of behavioral modification and varied enrichment techniques desirable. Previous experience with exotics is highly desired. Positions may be for any of the following areas: hoofstock, carnivores, bird/herp or commissary.

TRAINER/PRESENTER...(2 positions) - primary responsibilities are daily care, maintenance, and training of a varied collection of desert species including birds, mammals and reptiles used in mixed animal presentations. Prefer degree and animal training experience. Public speaking experience, strong desire to educated good communication skills a must.

ANIMAL KEEPER...we are looking for two individuals who are dedicated to providing the best care possible to a diverse collection of mammals, birds, and reptiles. These people will have had at least two (2) years paid experience working in a zoo, and will have had hands-on experience with wild animals in a licensed facility. Besides the normal care and feeding, the candidate will have experience talking to the public in a semi-formal type of atmosphere, and have some experience with enrichment programs. A degree in zoology or a related field is desired. The ability to interact with the public is a must. Benefits include paid vacation, sick days, medical and hospital insurance. Send resumé to: Vince Hall, Claws 'N' Paws Wild Animal Park, RD 6, Lake Ariel, PA 18436.

ZOOKEEPER...Chaffee Zoological Garden is located in the heart of California's San Joaquin Valley, only one hour from Yosemite, Kings Canyon and Sequoia National Park and only three hours drive to the ocean. Fresno is the most affordable place to live and work in California. Salary and benefits are excellent. (\$2,028.00 - \$2,467.00/month). Requires one (1) year of experience in the care, handling and feeding of animals in a zoo setting. Twelve (12) units in animal science, zoology, wildlife management may be substituted for six (6) months of the required experience. Knowledge of behavioral enhancement of exhibits, setting up breeding conditions, and specialized requirements of raising young is desirable. Applications may be obtained from Fresno City Human Resources, 2600 Fresno St., Fresno CA 93721, (209) 498-1575. **Filing deadline is 5:00 p.m. 20 January 2000.** Postmarks are not accepted. EOE.

ZOO KEEPER..Immediate Opening. Private, non-profit otter conservation facility for breeding and study programs, seeking dedicated individual for permanent position. Requires one (1) year experience with exotic animals - experience with mustelids preferred. Responsible for daily husbandry, maintenance of animals and grounds enclosures, diet preparation, and record keeping. Experience with animal restraint and blood drawing preferred. Must be physically strong (able to lift 50 lbs.) and work independently. 40-hour work week including some weekends and holidays. Benefits included. Send letter and resumé to: Otter Conservation Center, Inc., 250 Otter Conservation Rd., Statesboro, GA 30458. Resumés may be faxed to (912) 839-2551.

CURATOR, LIVING COLLECTIONS...The curator of living collection is responsible for maintaining and supervising a collection of over 100 animals representing 40 species. Additionally, this individual will be responsible for caring for animals on exhibit, developing in-house and outreach science programs to schools, families and professionals, and leading the design and development of new exhibits and habitats of the mini zoo, employing state-of-the-art techniques for interpretation and design. Qualified candidates must have an M. S. in Zoology or related field with three (3) years experience (or B.S. in zoology with five [5] years experience) working in animal management. Experience in developing inquiry-driven curricula utilizing live animals and knowledge in the development of live animal exhibitions desired. Grant writing and fundraising experience

facility is preferred. The qualified candidate is expected to be a team player/have good communication skills and have a broad base knowledge in mammal management; however, it is also expected that the candidate may have a special interest group of animals: primates, carnivores, etc. Salary is \$14.35 per hour. To apply, submit resumé to the Human Resources Office, San Diego Wild Animal Park, 15500 San Pasqual Valley Rd., Escondido, CA 92027, ATTN: HR/#261005; Jobline (760) 738-5006; Fax (760) 796-5614. **Deadline is 4:00 p.m., Monday 24 January 2000.** EOE. Visit our website at www.sandiegozoo.org

VETERINARY TECHNICIAN... at Audubon Zoo - under supervision of Associate Veterinarian, the Vet Tech will be expected to be responsible for all laboratory procedures performed in-house, and prepare samples to be sent to other labs as needed; maintain accurate records, assist vet staff in all forms of husbandry, surgery, routine health procedures, administration of medicine and anesthesia. In addition, vet tech will provide care and observation for animals housed in Animal Health Care Center (AHCC) and Quarantine Facilities as needed, maintain AHCC in clean and orderly condition, and act in coordination of AHCC Volunteer Program. Applicant must be graduate of an American Veterinary Medical Association Accredited Veterinary Technology Program, one (1) year of work experience as a Vet Tech; zoology/exotic animal experience preferred along with a valid driver's license. Interested applicants should forward resumé to: Director of Recruitment, P. O. Box 4327, New Orleans, LA 70178-4327, or resumés may be faxed to (504) 866-4326.

AFRICAN FOREST ZOOKEEPER...Columbus Zoo and Aquarium seeks full-time zookeeper. B.S. in zoology, biology, marine biology or related field required as well as three (3) years husbandry experience with birds and diverse mammals. Experience in diagnosis and treatment of common diseases in birds desirable. Excellent communication skills and ability to positively relate to guests and co-workers required. Typical duties: will provide care of birds in the brand new walk-through aviary facility including, but not limited to, food preparation, feeding, monitoring diets, watering, observing medical and behavioral changes, behavioral stimulation and assisting with medical treatments. Birds include: mousebirds, bee eaters, turacos, buffalo weavers, rollers, starlings, orioles, shrikes, teals, robin chat, hoopoes, W. African crown crane, African gray parrots. Also will provide above-listed care to primates, hoofstock and cats in the section as needed. Cleans and maintains exhibit area and equipment and performs basic horticulture work throughout the biome. Provides educational information about the biome animal population through interactions with the public. Salary commensurate with experience with excellent benefits and PERS retirement. EOE. Send resumé by **31 January 2000** to: The Columbus Zoo & Aquarium, Human Resources Dept., P.O. Box 400, Powell, OH 43065; Fax (614) 645-3599.

ANIMAL CARE INTERNS...Summer 2000. Four intern positions available within Fossil Rim's animal care department: Animal Care Intern, Children's Zoo Intern, Rhino Intern, and Avian Intern. Candidates should be in an undergraduate or graduate program related to wildlife management, conservation biology or a related science degree. Interns are responsible for the daily cleaning, feeding, health monitoring, observation, and sample collection of a number of exotic and domestic species including red, Mexican and maned wolves, various hoofstock, goats, sheep, tortoises, macaws, ocelots, Attwater's prairie chickens and black rhinos. Stipend may be available plus housing for a four-month position May through August. **Application deadline is 1 March 2000.** Send resumé to: Linda Gustafson, Fossil Rim Wildlife Center, 2155 County Road 288, PO Box 2189, Glen Rose, TX 76043-6107 or Fax (254) 897-3785. For more information call (254) 897-2960, ext. 305 or e-mail: animal.care@fossilrim.com

*Check AZA Member Institution job position listings
on the AZA Home Page: <http://www.aza.org>*

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I would like to send a special "Thank You" to **Gretchen Ziegler, Kayla Grams and Jeff Phillips** who were responsible for putting together the 1999 Index for *Animal Keepers' Forum*. An extra special "Thank You" to Jeff who not only completed the final compilation, but also sent it to me in a "camera-ready" format, saving me considerable time and hair-pulling!

I would also like to thank all those individuals who contribute to **AKF** on a regular basis - Columnists **Diana Guerrero** (ABC's), **Georgann Johnston** (Legislative Update) and **Bill Baker** (Reactions); Enrichment Options Coordinators **Gretchen Ziegler** and **Kayla Grams**; and to all my Book Reviewers, many thanks.

Susan D. Chan
Managing Editor **AKF**

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ANIMAL KEEPERS'
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The Journal of the American
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February 2000

Managing Editor: Susan D. Chan • **Associate Editors/Enrichment Options**

Coordinators: Gretchen Ziegler, Sequoia Park Zoo & Jan Roletto, Utah's Hogle Zoo • **Legislative Outlook**

Column Coordinator: Georgann B. Johnston, Sacramento, CA • **ABC's Column Coordinator:** Diana Guerrero, San Diego, CA • **Reactions Column Coordinator:** William K. Baker, Jr., Frank Buck Zoo, Gainesville, TX

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Zoo Infant Development Project - Nell Bekiaries, Southern Illinois University (Birds/Passerines)

Biological Values for Selected Mammals, 3rd Edition - Jan Reed-Smith, John Ball Zoo



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About the Cover.....

*This month's cover features a White-cheeked gibbon (*Hylobates concolor concolor*) female and her infant and was drawn by Mary Deckert, a Docent at the Los Angeles Zoo, Los Angeles, CA. Gibbons are the swiftest and most agile of the monkeys. Nature has given them great strength, in fact, a gibbon the size of a man would be 15 times as strong. Their tremendous arm length (up to 60 in. / 1.52m) allows them to travel effortlessly through the treetops of their rainforest homes. Adults weigh up to 50 lbs / 22.7kg) and reach maturity at about seven years of age. They live and travel in small bands, usually family groups and are noted for their characteristic cry, which is loud and prolonged. Females give birth to a single youngster after a gestation period of about 210 days. Thanks, Mary!*

Animal Keepers' Forum publishes original papers and news items of interest to the animal keeping profession. Non-members are welcome to submit articles for consideration. Articles should be typed or hand-printed and double-spaced. Authors are encouraged to submit their manuscripts on a disk as well as in hard copy form. Acceptable formats include: for Macintosh users - Microsoft Word or Works; IBM users - Word for Windows, WordPerfect or Wordstar. All illustrations, graphs, charts and tables should be clearly marked, in final form and should fit in a page size **no greater than 5.5" x 8.5" (14cm x 22cm)**. Literature used should be cited in the text (Brown, 1986) and alphabetically in the final bibliography. Avoid footnotes. Include scientific name (as per ISIS) the first time an animal name is used. Thereafter use common name. Use metric system for weights and measurements (standard equivalents may be noted in parenthesis). Use the continental dating system (day-month-year). Times should be listed as per the 24-hour clock (0800, 1630 hrs. etc.). Glossy finish black and white photos **only are accepted**. Color slides should be converted to black and white prints (minimum size 3" x 5" [8cm x 14cm]) before submission. Clearly marked captions should accompany photos. Please list photo credit on back of photo.

Articles sent to *Animal Keepers' Forum* will be reviewed by the editorial staff for publication. Articles of a research or technical nature will be submitted to one or more of the zoo professionals who serve as referees for *AKF*. No commitment is made to the author, but an effort will be made to publish articles as soon as possible. Lengthy articles may be separated into monthly installments at the discretion of the editor. The editor reserves the right to edit material without consultation unless approval is requested in writing by the author. Materials submitted will not be returned unless accompanied by a stamped, self-addressed, appropriately-sized envelope. Telephone and FAX contributions of late-breaking news or last-minute insertions are accepted as space allows. However, long articles must be sent by U.S. mail. Phone 1-800-242-4519 (US); 1-800-468-1966 (Canada); FAX (785) 273-1980.

**Deadline for each regular issue is the 10th of the preceding month.
Dedicated issues may have separate deadline dates
and will be noted by the editor.**

Articles printed do not necessarily reflect the opinions of the *AKF* staff or the American Association of Zoo Keepers, Inc. Publication does not indicate endorsement by the Association.

Items in this publication may be reprinted providing credit to this publication is given and a copy of the reprinted material is forwarded to the editor. Reprints of material appearing in this journal may be ordered from the editor. Back issues are available for \$3.00 each.

Scoops & Scuttlebutt



AAZK Now Online - Website Up and Running

AAZK, Inc. is now on-line! The AAZK Board of Directors and staff are pleased to present the new AAZK website! This site has been designed as a tool to help inform the world about AAZK, its mission, accomplishments, programs and goals. This site is also an interactive resource and forum for its members. There is a bulletin board that can be used by members to communicate with one another providing each other with important contacts and animal husbandry information. At this time, the bulletin board is closed to the general public. To post a question to the bulletin board, simply type in "aazk" (lower case letters) in the member name box, and "Elvis" in the password box. The website address is www.aazk.org<

Check out the site today! If you or your Chapter have any suggestions, comments, or submissions please contact: Diane Callaway at dianec@omahazoo.com or call (402) 733-8401. We will strive to keep the AAZK site an active one, but will need your contributions to do so! We would like to include a link to all AAZK Chapter sites. If your Chapter has a website, please forward the information to Diane. We would also like to add more animal photos to the "photo gallery" section, as well as photos of zoo keepers at work if you would like to donate them! Thanks and happy surfing!

AAZK Educational Safari on the Horizon

We're getting into travel! AAZK, Inc. is offering a fun and educational trip to Kenya. This trip has been designed with keepers in mind. Small group, low cost, and a chance to experience Africa in a way slightly different from the typical Safari tourist. The dates are November 4 - 17, 2000. For more information call the Administrative Offices at 1-800-242-4519 (USA) or 1-800-468-1966 (CANADA).

The trip is planned for just ten people. Come join the adventure!

AAZK Endowment Fund Gets First Chapter Donations

The newly inaugurated AAZK Endowment Fund (*see President's and Executive Director's messages in this issue*) is off to an excellent start with generous contributions from two AAZK Chapters. The Portland AAZK Chapter has contributed \$3000.00 to the funds from profits generated by the 1999 AAZK National Conference held in Portland. The Akron Chapter, a small AAZK Chapter of only five members, has donated \$2,000.00 to the Fund. The Akron Chapter has issued a challenge to all other AAZK Chapters to meet or exceed their donation. With over 70 Chapters in North America, if each Chapter matched Akron's donation, this could result in an AAZK Endowment Fund of close to \$150,000. The Board of Directors of AAZK, Inc. and the staff at Administrative Office wish to thank all the members of the Portland and Akron AAZK Chapters for their generous support the Endowment Fund - a fund which will provide for the financial security of the Association into the new millennium.

AAZK Seeks Home for Archivial Set of AKF's

AAZK, Inc. is looking for an institution interested in maintaining an archival set of *Animal Keepers' Forum*. This would be a second copy set of *AKF* and would not be used for reference purposes. AAZK, Inc. will provide a circulation copy of *AKF* to the hosting institution free of charge. Please send all inquiries to: Bruce Elkins at belkins@indyzoo.com or call (317) 630-2031.

Info on Binturong Survey and Listserve

With the cooperation of the AZA Small Carnivore TAG, Craig Schultz, an Animal Keeper at Disney's Animal Kingdom, is disseminating a husbandry survey on the binturong (*Arctictis binturong*). The results of the survey will be presented to the Small Carnivore TAG upon completion and be used to supplement a husbandry manual or as a chapter on the recommended management strategies for this viverrid species. Each institution participating will also receive a copy of the results once the data has been compiled. If your institution maintains binturongs as part of its collection and has not yet received a survey but would like to participate, you may contact him at: Disney's Animal Kingdom, Attn: Craig Schultz, Animal Keeper, P.O. Box 10,000, Lake Buena Vista, FL 32830-1000; e-mail:Zoonrn96@gateway.net<

Craig is also in the process of creating an AZA Listserve for binturong keepers in zoological settings. Due to the lack of information regarding this species, the listserve will provide an opportunity for professionals to exchange husbandry and training information. Individuals interested in participating should send your name, name of institution, and e-mail address to Craig at >zoonrn96@gateway.net< This listserve endeavor is an individual effort and is not associated with Disney's Animal Kingdom.

Center for Ecosystem Survival Receives Committing to Conservation Grant

The San Diego Zoological Society presented the first *Committing to Conservation* Grant of \$5,000 to the Center for Ecosystem Survival to support jaguar research in Costa Rica. The *Committing to Conservation* grant was given in memory of Michael Werikhe and was announced at the Third *Committing to Conservation* Conference hosted by the San Diego Zoological Society this past December. The matching grant will support CES's conservation partnership with the Universidad Nacional de Costa Rica and The Nature Conservancy to study the habitat requirements of jaguar in Corcovado National Park, Costa Rica to develop strategy recommendations for the management and conservation of this natural area.

The Center for Ecosystem Survival is dedicated to creating global partnerships to inspire broadbased participation in the preservation of biological diversity through ecosystem protection world wide. For more information about the Center for Ecosystem Survival's programs contact the Center for Ecosystem Survival, Department of Biology, San Francisco State University, 1600 Holloway Avenue, San Francisco, CA 94132 (415) 338-3393 / FAX (415) 338-2295, ecosystm@sfsu.edu.

Corrections of Note

Please note the following corrections: the new rhino keepers website address was incorrect is the January issue. It should be <http://www.geocities.com/rhinokeeper>.

The San Diego AAZK Chapter sends this correction: on the 2000 Animal Buns Calendar (March page) the address for the Center for Ecosystem Survival is incorrect. The Center is not located at the San Francisco Zoo, but at the address listed in the *Committing to Conservation* grant item above. The Chapter apologizes for this error.

ADTForm Available for Animal Shipments

Animal Data Transfer Forms (ADTForms) for use whenever an animal is shipped to a new institution are available free as a professional courtesy from AAZK, Inc. These forms help provide vital information on an animal's medical, dietary and reproductive history to the receiving institution's staff and veterinarian. We hope you will encourage the use of ADTForms at your facility whenever an animal is shipped. To order a supply, contact AAZK Administrative Office, 3601 S.W. 29th St., Suite 133, Topeka, SKS 66614 or call 1-800-242-4519 (U.S.) or 1-800-468-1966 (Canada); or fax your order to (785) 273-1980.

Message From the President

Welcome to the year 2000 !

On behalf of the Board of Directors, I would like to wish each and everyone of you a happy and prosperous new year and hope your holidays were festive and safe.

The new year offers us all new hopes , dreams and challenges. The American Association of Zoo Keepers, Inc. has a challenge that will hopefully be met by the membership and the Chapters of this organization. As we enter into the new millennium the Association will need to become much more self sufficient. We need to create a financial base that will allow us to forge ahead without putting the burden of the expenses onto the membership through higher membership dues. The Endowment Fund should help us meet this goal. The Endowment Fund however can not start meeting these demands until it is fully funded. This is where one of the challenges for the next few years will be. Chapters and individual members have been very generous to the organization over the past few years. We have been able to help support organizations like Lewa Wildlife Conservancy and help them become what they are today. We could not have done this without the support of all the membership and the fund raising efforts of our Chapters. We need to continue to support the projects we are dedicated to but also we need to support our parent organization with the same enthusiasm.

With this I would like to challenge each Chapter or individual to help us meet our goal. The Akron Chapter of AAZK (only 4 members strong) has generously offered to start off the challenge by donating \$2000 toward the Endowment Fund. Their cheer is “\$2000 for 2000.” They would like to challenge all other Chapters to match or exceed their donation. Before this has even gone to print the Portland Chapter has also come forward and donated \$3000 toward the Endowment Fund. So on behalf of both the Akron and the Portland Chapters I would like to challenge all Chapters and individuals to match or better these donations. Challenges can be issued by individual Chapters or the Chapters of a state can challenge other states. Let's be creative. It is amazing what we can accomplish when we all pull together and challenge each other.

We will be publishing our financial goals for this fund shortly but more importantly we will issue a time frame in which we would like to accomplish our goals. I would like to thank all of you for your support with this important endeavor. I am confident that we will meet this challenge and help create an organization that is ready to challenge the new millennium !



Scott M. Wright
AAZK President



From the Executive Director

As stated at the 1999 AAZK Annual Conference, our goals for the year 2000 were two-fold and very simple. One, to update and launch the AAZK Web Page, making it dynamic, informative and interactive. In January of 2000, we made the preliminary launch of the site and we are proud to say the site is up and running for the membership.

The site will allow for immediate communication between the membership and Chapters. By utilizing the case-sensitive user name and password (as noted in this issue of *AKF*) you can access the bulletin board for information exchange. To keep this site professional, it is in your best interest to guard the master password. It is worth mentioning that the Board argued long and hard regarding this type of communication. Every effort should be taken to promote professional communication. The site also affords open communication with the Board of Directors, staff and myself. Please e-mail us with your questions and comments when the mood strikes.

Our second goal was to develop an Endowment Fund to solidify the financial structure of your Association for the future. The Endowment Fund concept has evolved into a true investment strategy. An investment policy has been created and will be ratified by the Board in the spring and the membership shall be afforded the opportunity to comment.

As Scott states in his message this month, our drive for the fund is now open. We have already realized generous base donations from the Portland AAZK Chapter of \$3000.00 and \$2000.00 from the Akron Chapter. Funds were collected from the membership in Portland and are already on deposit. Individual and Chapter contributions to this fund are critical for our future. You have generously contributed to the operating accounts of the Association in the past, the direct result being we are now ready for the next step. I would like to make one last plea to the membership and Chapters for contributions to this fund. Our goal is \$75,000, which will afford us stable membership fees, the ability to budget for projects and publications and to continue awarding grants, while planning for growth of programs in the future. Our target goal is high, but well within the means of our dedicated Chapters and members.

Thank you,



Ed Hansen
AAZK Executive Director



Coming Events

Primate Training and Enrichment Workshop

February 16-19, 2000 at the University of Texas M.D. Anderson Cancer Center, Bastrop, TX. For caregivers, keepers, supervisors, veterinarians, and investigators working with nonhuman primates. Goals of the workshop are to provide practical solutions to participants' current primate behavioral management needs. Instruction will focus on operant conditioning, environmental enrichment and problem solving techniques. Instructors: Mollie Bloomsmith, Zoo Atlanta; Steve Schapiro, UTMDACC; and Adam Stone and Gail Laule, Active Environments. Contact Steve Schapiro, Dept. of Veterinary Sciences, UTMDACC, Rt. 2, Box 151-B1, Bastrop, TX 78602; e-mail: sschapro@mdanderson.org; phone: (512) 321-3991; Fax: (512) 332-5208.

Eight Annual Conference of the International Association of Avian Trainers and Educators

February 18-21, 2000. Hosted by the Memphis Zoo, Memphis, TN. For more information, call Kate Friedman at (901) 725-3400 ext. 3800 or e-mail at kfriedman@memphiszoo.org

ARAZPA/ASZK Conference 2000 - March 20-24, 2000 in Gold Coast, Australia. Hosted by Sea World. For further information contact: Aileen Forrester, ARAZP/ASZK Conference Organizer, Sea World, P. O. Box 190, Surfers Paradise, Qld, 4217, Australia.

7th Western Black Bear Workshop - May 2-4, 2000 in Coos Bay, OR. Hosted by the Oregon Department of Fish and Wildlife. Registration and program information available from: Dave Immell, Oregon Dept. of Fish & Wildlife, 4192 N. Umpqua Hwy., Roseburg, OR 97470; phone (541) 440-3353; Fax (541) 673-0371; e-mail: dave.a.immell@state.or.us

The Apes: Challenges for the 21st Century - May 10-14, 2000 in Chicago, IL. Hosted by The Chicago Zoological Society (Brookfield Zoo). A unique conference focusing on the apes of the world. It is hoped to bring together researchers, zoo personnel and field biologists from all over the world. Keynote speakers include Dr. David Chivers for lesser apes, Dr. Carl van Schaik for orangutans; Dr. Gay Reinartz for bonobos; Dr. Claudia Olejniczak for gorillas; and Dr. Toshisada Nishida for chimpanzees. Plenary speaker is Dr. Russell Mittermeier, President of Conservation International. Conference will include several days of presentations, an icebreaker, round table discussions and a day at the Brookfield Zoo including a silent auction, raffle and a banquet. Immediately following the conference, Lincoln



Park Zoo will host the North American Ape Taxon Advisory Group meetings. Deadline for abstract submissions is **15 February, 2000**. For information on registration/submitting of abstracts contact: Brookfield Zoo Ape Conference Planning Committee at (708) 485-0263 ext. 604; Fax (708) 485-3140, or e-mail APECON@BROOKFIELDZOO.org

Fifth International Elephant Research Symposium (June 2-3) and the Second North American Conference on Elephant Foot Care and Pathology (June 4) Hosted by Oregon Zoo For further information contact: Norie Dimeo-Ediger at (503) 220-5763, by fax at (503) 226-0074, or by e-mail : edigern@metro.dst.or.us<

Animal Behavior Society Annual Meeting August 5-9, 2000 in Atlanta, GA, co-hosted by Morehouse College and Zoo Atlanta. Along with contributed talks and posters, the meetings will include special symposia on "Dispersal Behavior" and invited papers on "Comparison Between Primates and Cetaceans". Plenary speakers include Chris Boake, Hugh Drummond and Dee Boersma. For further info see: <http://www.animalbehavior.org/ABS/Program/>



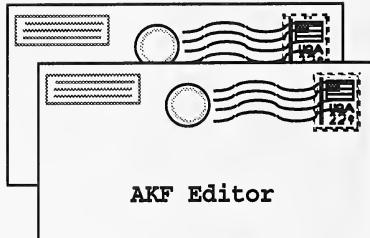
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Letters to the Editor

Readers are invited to submit Letters to the Editor commenting on material which is published in Animal Keepers' Forum.

Dear Editor,

The news note on page 489 of the December issue stated that Kruger Park "tried two kinds of contraceptives on elephants...with little success." This is not accurate. The elephant immunocontraceptive research conducted by ZooMontana, University of Georgia and Pretoria University was in fact very successful and reduced fertility significantly among treated females. The immunocontraceptive vaccine has not been applied yet at the management level, thus to say it was unsuccessful is premature at best and inaccurate at worst. Whether the vaccine has practical applications in large populations such as that in Kruger Park remains to be seen, but it will certainly save the lives of many elephants in smaller populations in the future, in both South Africa and Kenya.

Jay F. Kirkpatrick
Director of Science and Conservation Biology
ZooMontana, Billings, MT

The report referred to appeared in the Legislative Update (Vol. 26, No. 12) and was taken from an article which appeared in the South African Weekly Mail & Guardian newspaper (Oct. 29, 1999). The article quoted Profesor Rudi van Arade, author of the report. For more information about immunocontraception, we refer you to the article "Immunocontraception of Captive Species: A New Approach to Population Management" which appeared in the Sepetember 1998 issue of AKF (Vol. 25, No. 9). It was co-authored by Kimberly M. Frisbie, Associate Curator and then-Curator Jay F. Kirkpatrick from ZooMontana..

New Use for Elmer's Glue: Penguin Eggs

One very lucky penguin is alive and well today thanks to the quick thinking of Sea World bird specialist Cyndi Laljer and a liberal dose of Elmer's Glue-All®. A few months ago, a penguin egg was discovered in a nest at Sea World San Antonio's Penguin Encounter, an icy habitat housing about 200 penguins representing four species. However, about halfway through incubation, the egg was found with half of its surface pushed inward. Laljer pulled the ailing egg from the nest and held it to a light. The chick was still moving, so she applied a liberal coat of Elmer's Glue-All® to prevent the egg's membrane from drying and ripping. The egg was placed in an incubator for two weeks until it was ready to hatch, at which time the chick needed a little assistance emerging from the glue-reinforced egg. And the name of this new arrival? Elmer, what else. Since Elmer's successful hatching, Sea World San Antonio has used Elmer's Glue-All® to save other chicks whose eggs were cracked and the procedure has been shared with Sea World parks nationwide.

--reprinted from ANHEUSER-BUSCH HORIZONS, Third Quarter 1999

Conference 2000

Columbus, OH

October 8 - 12, 2000

The Columbus AAZK Chapter and the Columbus Zoo and Aquarium are excited to host this years National AAZK Conference from the 8th - 12th of October; The Adams Mark Hotel in downtown Columbus will be the site for these meetings. Room rates will be \$99 for single and double occupancy, \$114 for triple and \$129 for quad; Adams Mark has excellent facilities and is centrally located to many of Columbus' highlights: Short North, Brewery District and German Village.

Plans have already been made to visit the Cleveland Metroparks Zoo for our pre-conference trip. On the morning of Friday, 7 October a bus will depart for Cleveland and upon arrival delegates will be able to visit the Rock-N-Roll Hall of Fame, the Great Lakes Science Center and the Omnimax Theater. The evening will be spent in the Flats District, an area of restaurants and bars on Lake Erie. Delegates will spend the night in the zoo's Wolf Wilderness Cabin. Saturday will be spent touring the Cleveland Zoo and then returning to Columbus. The cost for this trip has not yet been determined but will be low mainly due to the generosity of the Cleveland AAZK Chapter and the Cleveland Zoo.

The tentative agenda for the conference includes board and committee meetings occurring on the 7th and 8th, with an ice breaker to formally start out the conference on Sunday evening. Paper sessions will be held all day Monday and Tuesday and Thursday morning. Tuesday will also include an Awards Luncheon and the Silent Auction. Wednesday will be Zoo Day, and Thursday will include the General Meeting, as well as the Closing Banquet and Live Auction.

Our post-conference trip will have two options: a one day trip to the Wilds in Cumberland, OH a unique facility encompassing two thousand acres. In addition this can be extended to a trip to the Hocking Hills region of Ohio. This time of year should be excellent for observing fall foliage and visiting one of the prettiest parts of our state. Arrangements will include a two-night (Friday and Saturday) stay in cabins in this area. We will update you with a more detailed itinerary and cost as soon as is possible.

We hope to make this a conference that works for all attendees and their areas of interest. We have booked ample meeting space for workshops, regional AAZK meetings, etc. Please contact us and let us know of any meetings you would like to have. As well we are open to suggestions and ideas. Please visit our website at "<http://www.angelfire.com/oh2/aazk2000>". It includes a link to our email so that you can let us know what you want! Old fashioned phone calls and mail are welcome, too! Please send anything to the attention of Scott Shelley or Beth Pohl, AAZK 2000 Executive Committee, P.O. Box 1256, Powell, OH 43065 and the zoo number is (614) 645-3400.

AAZK Award Nominations Are Now Being Accepted for 2000!

The AAZK Awards Committee is accepting nominations for the **Jean M. Hromadka Excellence in Zookeeping Award (EZ)** to be presented at the 2000 AAZK Conference in Columbus, OH. The deadline for all award nominations is **1 June 2000**. Information concerning the qualifications, nomination procedure, selection procedure and an explanation of the awards may be obtained by contacting Janet McCoy, Awards Chair, AAZK Awards Committee, Oregon Zoo, 4001 S.W. Canyon Rd., Portland, OR 97221.

Jean M. Hromadka AAZK Excellence in Zookeeping (EZ) Award

The American Association of Zoo Keepers, Inc. (AAZK) is the administering organization of the Jean M. Hromadka Excellence in Zookeeping Award presented by the AAZK Awards Committee. The purpose of the award is to recognize achievement and determination of an individual in the zookeeping field and in fostering professionalism. Zookeeping is a science combining zoology, biology, animal management, behavioral observation and daily record keeping on the collection of species in their care. This is essential knowledge for maintaining a species effectively in captivity. The excellent zookeeper must excel in one or more of these areas, but not be lacking in any of them.

The Excellence in Zookeeping Award was founded by John Siegel, 1974-1975 CHAIR, in 1974. The original name of the award was the Marlin Perkins Award, named after the famed zoologist who started his career as a zookeeper. The name was changed in 1978 to the EZ award. In 1990, the name was changed to the Jean M. Hromadka Excellence in Zookeeping Award in memory of her outstanding contributions to the furtherance of AAZK through committee work and as President. The award is presented at the annual AAZK National Conference.

Qualifications:

1. The nominee **must** be a full-time animal keeper, employed in any North American zoological institution, aquarium or related facility for at least five years.
2. The nominee **must** have been employed at least two years on permanent status at the same zoo, aquarium or related facility.
3. The nominee **must** be nominated by his or her peers who have also been employed at that same zoo, aquarium or related facility. Supporting nominations may be submitted by management personnel from the same institution.

Nomination Procedure:

1. List name, position, institution's name, address, phone and Director, years of service in the field and the recommendation of peers or colleagues.
2. List and **document** commitment to the profession, outstanding achievements, practical/outstanding application of knowledge and experience, and keeper skills, etc. **Verification** of these facts must be signed by the zoo director, curator, or immediate supervisor of the individual being nominated.
3. List any extra activities outside of zoo, aquarium or related facility work: working with conservation groups, youth, wildlife officials, etc.

4. Deadline for nominations is **JUNE 1st** of each year.

Selection Procedure: The Awards Committee, consisting of five keepers, will independently review each nominee.

LIFETIME ACHIEVEMENT (LA) Award

This award is to be given at the end (retirement) of a keeper's career. The purpose of the award is to recognize outstanding commitment to professionalism as a zoo keeper over a long period of time, and significant contributions to the zoo community.

The Lifetime Achievement Award was established by the 1993 Awards Committee, Janet McCoy, Chair. Rachél Rogers proposed the award to the AAZK Board of Directors. The award is presented at the annual AAZK National Conference.

Qualifications:

1. The nominee **must** be a full-time keeper retiring from a career of zoo keeping and employed in any North American zoological institution, aquarium or related facility.
2. The nominee **must** have been employed at least twenty years on permanent status at a zoo, aquarium or related facility.
3. The nominee **must** be nominated by **two** of his or her peers who have also been employed at that same zoo, aquarium or related facility. Supporting nominations may be submitted by management personnel from the same institution.

Nomination Procedure:

1. List name, position, institution's name, address, phone and Director, years of service in the field and the recommendation of peers or colleagues.
2. List and **document** outstanding achievements: exhibits, breeding, education, project participation, papers, etc. **Verification** of these facts must be signed by the zoo director, curator, or immediate supervisor of the individual being nominated.
3. Describe extra activities outside of zoo, aquarium or related facility work: working with conservation groups, animal related youth groups, rehabilitation wildlife officials, etc.
4. Paragraph of why the nominee fits the criteria.
5. Provide 3 - 5 references.
6. Deadline for nominations is **JUNE 1st** of each year.

Selection Procedure: The Awards Committee, consisting of five keepers, will independently review each nominee.

MERITORIOUS ACHIEVEMENT (MA) AWARD

The purpose of the award is to recognize professional members of AAZK and AAZK Chapters, in good standing in the Association, for their extra work performed outside the keeper level of performance. This includes keeper participation in AZA Bean Award projects, dedicating time to other zoo related projects (conservation, wildlife education and individual breeding projects) and educating others in such programs as Scout Patch Programs.

The MA was established in 1982, by Mike Crocker, 1980-1985 CHAIR, as a means of recognizing work done outside of the scope of the Excellence in Zookeeping award. It is the only award presented by the Awards Committee that you have to be a member of the Association to receive. The award is presented at the annual AAZK National Conference.

Qualifications:

1. The nominee **must** be a full-time keeper and professional AAZK member employed in any North American zoo, aquarium, or related facility. In the case of an AAZK Chapter, it must be 'in good standing' having an up-to-date charter with the AAZK.
2. The nominee **must** have been employed at least one year on a permanent basis at a zoo, aquarium or related facility. In the case of an AAZK Chapter, it must have been active for at least one year.
3. The nominee **must** be nominated by his/her peers or colleagues, while supporting nominations may be submitted by other zoo, aquarium or related facility personnel. The nominators need not be from the same institution.

Nomination Procedure:

1. List name, position, institution's name, address, phone and Director, years of service in the field and the recommendation of a peer or colleague.
2. List and **document** the outstanding achievements: AZA Bean Award project participation, exhibits, breeding, conservation, etc.
3. The deadline for nominations is **JUNE 1st** of each year.

Selection Procedure: The Awards Committee, consisting of five keepers, will independently review each nominee.

The American Association of Zoo Keeper, Inc. (AAZK) is the administering organization for the Jean M. Hromadka Excellence in Zookeeping Award, the AAZK Lifetime Achievement Award, and the Meritorious Achievement Award presented by the AAZK Awards Committee from nominations by the membership. The character of these awards includes a plaque, letter of notification to the institution's director and national recognition by professional journals. Such journals include: The American Zoo and Aquarium Association's *Communiqué*, the Canadian Association of Zoological Parks and Aquariums (CAZPA) newsletter, *Animal Keepers' Forum* (AAZK), Awards, Honors and Prices: United States and Canada. The latter is published by Gale Research Company based in Wheaton, MD and is found in medium to large sized libraries across the U.S. and Canada.

Award nominations should be submitted to:

Janet McCoy, Awards Chair

The Oregon Zoo, 4001 S.W. Canyon Rd., Portland, OR 97221.

Next month we will include information on making nominations for the Certificate of Merit for Zoo Keeper Education Award and the Certificate of Excellence in Exhibit Renovation Awards.

Award Nomination Submission Deadline is 1 June 2000

New & Renewing AAZK Professional, Institutional, and Contributing Members

New Professional Members

Darlene Ann, **Capron Park Zoo (MA)**; Zachary C. Murray, **Clyde Peeling's Reptileland (PA)**; Chris T. Adams, Chris E. Sheppard, Kathryn I. Bertok, Allison J. Larios, and Tarah E. Brinkerhoff, **Carnivore Preservation Trust, Inc. (NC)** Christopher J. Bernardi, Angie Hutchins, Sudona Sunny Burrus, Cindy Ferguson and Kelly Holt, **Zoo Atlanta (GA)**; Melody Cooke and Christopher Falanga, **Jacksonville Zoo (FL)**; Angela Millwood, **Disney's Animal Kingdom (FL)**; Cindy Lammock, **Columbus Zoo (OH)**; Patti Rowe, **Detroit Zoological Institute (MI)**; Elizabeth Meyers, **Washington Park Zoo (MI)**; Scott Wahlberg, **Roosevelt Park Zoo (ND)**; Tammi Imm, **Topeka Zoological Park (KS)**; Christi Berggren, **Riverside Zoo (NE)**; Jenifer Sullivan and Stephanie Bessette, **Audubon Zoo (LA)**; Robert

A. Garner, **Ft. Worth Zoo (TX)**; Kristi Nuyttens, **Sea World of San Antonio (TX)**; Erin Kelly, **Wildlife Safari (OR)**; Leigh Spooner, **African Lion Safari (Ont., Canada)**; and Lydia Attard, **Toronto Zoo, (Ont. Canada)**.

Renewing Institutional Members

Birmingham Zoo, Inc.
Birmingham, AL

F. O. Wilson Library
Oklahoma City, OK

Frank Buck Zoo
Gainesville, TX

Tautphaus Park Zoo
Idaho Falls, ID

American Association of Zoo Keepers

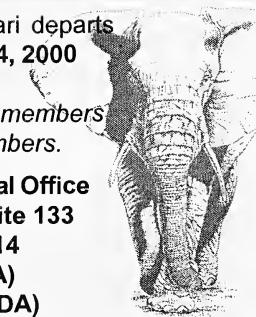
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1-800-242-4519 (USA)
1-800-468-1966 (CANADA)



ABC'S

Animal Behavior Concerns & Solutions

A Question and Answer Forum for the Zoo Professional

By Diana Guerrero, Independent Behavior Consultant,
Ark Animals of California, San Diego, CA

Topic of the Month: Lemur Evaluation (*Eulemur fulvus*)
Education Department, Private Zoo

Question

We are having problems getting a female lemur to be social and leave her security area or surrogate mother. Do you have any suggestions?

Background

Eulemur fulvus is an arboreal prosimian and have been described as primarily diurnal. This species shows an inclination to being crepuscular and is found in groups ranging from 4-17 animals (average group size around 10). It is suspected, that as part of the adaptation to survival to this arboreal lifestyle, that the mother-infant bond lasts longer and the species is slower in development in comparison to some of the other species of lemur.

This animal was isolate-reared at another facility and little is known about her socialization or rearing history. The female arrived at her new facility at (8 weeks) and is slated to be an ambassador animal. Usually *fulvus* begins to take solid food at seven weeks but nursing continues beyond 12 weeks. Some estimates are that nursing can continue through 5-6 months. They also begin to show some venturing behavior around nine weeks and usually approach and come in contact with other animals.

Initially this animal was amiable to others as long as she was in contact with her surrogate (furry blanket) that she arrived with. As time has passed she has continued to spend most of her time clinging to the surrogate. In addition, she seldom ventures away from it when outside of her enclosure. She will leave it for brief periods of time when in her enclosure.

At 14 weeks the animal continued to cling to the surrogate while lying on her back. This ventral position usually begins to shift to a dorsal position at two to four weeks when the animal is with the mother. She began to show high incidences of fear behavior and startles when exposed to noises, familiar handlers approaching and other stimuli within the environment. In addition, she displays a low-level defense threat through the stiffening of her body and through the puffing of her tail.

Other changes have been the decrease in any interest in handlers and a decline in her greeting behavior and a great decrease in her contact seeking vocalizations. She has also displayed a distress threat behavior at least once toward a handler without any apparent triggers and more recently at another several days in a row. During stress situations she has lunged to bite one handler twice, making contact once and being deflected with a distraction object the second. Recently she became alarmed and bit another handler.

Discussion

In general, *fulvus* is slower in breaking the mother-infant bond than other species and the mothers will often prevent others from taking over infants until about four weeks of age. The youngsters will begin to venture short distances away from their mothers for short periods of time sometime after that time.

It has been stated that infants of this species stay close to the mother until about somewhere around 80 days. Forced separation at 150 days resulted in trauma to the infant displayed through frenzied behavior or stupor. This animal has shown this trend.

Major events in infant development by Klopfer shows handling by another animal other than the mother at 28-30 days for a female infant; at 82-97 days the female infants showed only 30% of an observation hour spent in time away from mother. Male infants showed about 80% of time away from their mother while females only showed 50% during a 215 day observation period. (Klopfer & Beoskoff, 1979)

This animal was weaned and isolated at a very early age. Despite socialization and other efforts to mold her into a more well-rounded individual, she has shown little improvement or motivation toward becoming more social.

Although she fits within some of the normal parameters for *fulvus*, it appears that this animal has some retardation in her social development. However she is just now approaching the window of showing more independence (23 weeks) and things may begin to shift.

In other species there are trends toward fearful behavior, social integration, etc., that can escalate during certain windows of time. It may be that this animal was placed during such a period and hence the complications. Genetic predisposition inherited from the parents could be another contributing factor.

Suggested Steps Being Implemented

Teach the animal to separate voluntarily.

The first step was to begin to reward the animal for a "come" behavior. The animal would come to the handler for the food reward and then return to the security of the surrogate. This animal performed "A to B's" initially but then began to bounce and run around. No duration was sustained for this behavior at this time.

Decrease the motivation to cling to the surrogate and reduce the security area.

The second step was to remove the favored surrogate and to replace it with a less favored surrogate. (Also, the favored surrogate was reduced in size and continues to be used in times of higher stress.) This was approximated over time and the surrogate was attached to the side of the enclosure so that it could be withdrawn without risk or association with the handler or caretaker. Due to the disposition of the animal and slow development the decision was made to not remove the surrogate totally. No shifting of bonding toward the handler occurred, as is often the case with some other species.

Change the position of the animal to an upright position.

The surrogate was also hung along one of the walls of the enclosure so that it barely touched the floor and so that it would change the clinging position of the animal to an upright posture. Consistency here proves to be a challenge depending on the schedule of the facility and caretakers maintaining the enclosure.

Increase the time away from the surrogate.

The fixed position within the enclosure also increased the time that the animal had to spend away from the surrogate to engage in eating, drinking, and play. Additionally,

the surrogate could be removed for various periods of time from outside of the enclosure and without direct association to the handler.

Crating & marking behavior.

This animal was taught to "mark-up" ("A to B" or stationing behavior) early on. She was crated daily while her enclosure was cleaned and for relocation for socialization. Food reward was used with this animal without any formal conditioned reinforcer. (Although a verbal "good" was often used.) The animal began to show less cooperation over time for these behaviors.

Introduction to a conditioned reinforcer.

A conditioned reinforcer was introduced once training on the lead began. After five sessions she still did not show any comprehension of what it signified. Work on this conditioning is currently ongoing.

Introduction to a waist harness & lead.

This animal was fitted with a waist harness to facilitate training and to be used as a restraint device with a leash for safety purposes. The initial fitting was done while the animal was allowed to cling to her surrogate. Loose leash experiences were done for two sessions and later slight tension was approximated.

Introduction to restraint, positioning, and new environments.

The animal was allowed to experience the leash restraint when she attempted to leave the handler and enclosure area during "A to B" work. The introduction was a bit disconcerting to the animal but within three sessions she acclimated fairly well.

This animal was also later introduced to a higher distraction area within a controlled environment for safety. She did not respond well. It was during this time that she attempted to bite. One situation was due to handling error, the other had no discernable trigger. The distraction level was dropped back and she currently is making good progress.

The criterion has been increased and she has to stay positioned on the handler while on lead. Proper positioning is below shoulder level. If startled, she has learned to jump onto the lap of the handler. This animal is progressing slowly.

Alternative remedies.

Dr. Edward Bach made flower remedies popular in 1930. They are non-toxic and will not interfere with any other treatment modality and so can be used in conjunction with a variety of applications. Remedies can be given in the water, food, or directly applied to the animal. Remedies can work immediately or take several weeks to show improvement.

This animal was given a Bach Flower® combination of Aspen, Willow, Crabapple and Rescue Remedy. This animal has shown improvement with administration twice a day and is given the remedy as needed when being worked.

Final Note

This animal seems to have a high degree of fearfulness in comparison to other workable lemurs. She has a tendency to trigger off minor changes and even reacts to familiar handlers fearfully when in a slightly higher distraction area. She has shown no interest or trust in anyone. Her tendency to bite when unable to flee has been exhibited several times. If you do not see any changes within four weeks of consistent application you will need to re-evaluate the role of this animal.

Acknowledgements

Special thanks to Dr. Adrianne Moore and Dr. Stephen Blake for their assistance and preliminary training in the use of the flower remedies.

Resources of Interest

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About the Author: Since 1978, ARKANIMALS.COM Director, Diana Guerrero has worked professionally in a variety of animal facilities. Attending and completing courses in both animal management and training from institutions both here in the United States and Europe, she has been affiliated with some of the best organizations. She is an alumni of The Moorpark College Exotic Animal Training & Management Program, The Gentle Jungle Animal Affection Training School, The International Training Centre at the Jersey Wildlife Preservation Trust, and special program extensions with Marwell Zoological Park and Kent University. Guerrero started her career in the marine mammal field working as a naturalist, and subsequently became involved with terrestrial animals in zoos and other facilities. Guerrero writes a variety of animal-related columns, including the popular series, Unusual Animal Careers and does seminars nationally. Watch for two of her book projects in the summers of 1999 and 2000! Questions for ABCs should be submitted to Diana directly via e-mail: >arkabc@arkanimals.com < or via regular mail to ARKANIMALS.COM, P.O. Box 1154, Escondido, CA 92033 USA.

Good-Bye to All of That, Reflections on 24 years of Zookeeping

By Robert Berghaier, former Animal Keeper at
the Zoological Society of Philadelphia

The start of a new year and a new millennium will find me leaving a job at the oldest zoo in the country for a position in the oldest natural history museum in the States, The Philadelphia Academy of Natural Sciences.

I have already taken the opportunity to thank Susan Chan, *AKF* Managing Editor, privately for her support and encouragement over the years, and I will do so now in a public forum. *AKF* published numerous pieces I have written and Susan has been very helpful with that. I have found writing to be a valuable outlet of personal expression as well as therapeutic. I hope some of you found my various essays to be of some interest, for those whom I have bored, and I am sure there are many, my apologies. I would like to request your attention for one last time.

Twenty-four years is a long time to spend in any profession. Such an amount of longevity is rare in this modern world of a global economy, mega-mergers and corporate downsizing. Twenty-four years in zookeeping is now rare in my zoo as well. Twenty or more years was almost the norm when I started at Philadelphia in 1975. During those years I have observed many changes, nearly all of them for the better. The two most striking changes have been the increase in female keepers and behavioral enrichment.

When I first started there were about 40 keepers employed, four of which were women. In 1999 less than half the keeper force is male. Overall this has been a positive change. The influence of our female colleagues has softened the harder cowboy or rodeo aspect the profession had 20 years ago, particularly in regards to animal moves. Observing how a more feminine, go-slow-and-try-not-to-stress-the animal approach has cut down the amount of injuries to staff and animals in the latter part of my career has convinced me of this.

Watching the growth of environmental and behavioral enrichment for captive animals has fascinated me. I was taught by the old timers who thought a clean, barren cage was the epitome of professionalism in zookeeping. After reading about keepers such as Jim Higgins at the Chicago Lincoln Park Zoo and Richard Johnstone Scott at Howlett's who gave great apes hay to make nests, paper bags and boxes for toys, and had their charges forage around hay for scattered food items, I knew I had to try it myself. My older compatriots were not only unsympathetic, but often downright hostile to the idea. Eventually it became the norm for primate husbandry at Philadelphia and other institutions. The concept spread to smaller primates and within the past ten years to all animals in the collection. The *AKF* "Enrichment Options" started as a regular feature as recently as January 1992. Enrichment has become such a large part of our profession it is hard to imagine just how recently its importance to captive animal welfare has been recognized. I have, at times, seen the trend swing so far in a pro-enrichment direction that I sometimes refer to the field as "keeper enrichment".

I would like to mention what I think are two of the most important articles that have been published in *AKF*.

The first is "*Wild Things in Wild Spaces: Interpreting Native Species on the Zoo Grounds*" by Michael Demlong, June 1994. Zoos are missing a great opportunity in not addressing the various species of native wildlife, particularly birds, which are found on zoo grounds. This article showed how The Phoenix Zoo incorporated several types of wild fauna living on its property into informational graphics for the zoo's visitors. I really think that all zoos should set up a similar type of program and this paper examines the issue and demonstrates how Phoenix developed theirs.

The second item is "*Giving Our Animals More Time in Their Exhibits*" by James Bousquet, April 1995. Mr. Bousquet makes an excellent point. In spite of great amounts of money spent on outdoor naturalistic exhibits, most zoo animals continue to spend only a limited amount of time in these creations and spend the bulk of their lives in cramped, sterile night quarters. For example, in Philadelphia our bears, African hoofstock and many of the carnivores spend a maximum of seven hours per day on exhibit. What has been obvious to me for some time is that keepers should work in either staggered shifts, or a closing crew should be formed to allow these animals more time spent outside in the late spring, summer and early fall. This matter has never been properly addressed by either the management or union at Philadelphia and I am sure this is the case at other institutions as well. In my opinion the entire issue should be considered an animal welfare issue. If major donors to zoo exhibits and zoo members realized what a relatively short period of time captive animals spend in naturalistic outdoor enclosures, they would be appalled. Mr. Bousquet's ideas need to be taken seriously.

A further issue. When is this field going to develop building techniques that allow inexpensively constructed exhibits that provide for adequate animal care, keeper and zoo support staff service access, and let the public view animals in a natural environment? When single zoo exhibits start costing tens of millions of dollars to build I believe we are going in the wrong direction. Two recent primate exhibits have opened in two eastern cities. The costs have been some \$50 million for one and \$23 million for the other. I wonder if most zoo employees and zoo members and supporters realize that you could establish a trust fund in those amounts for which the interest alone could run the national parks of Uganda or Tanzania or Kenya, and save countless more individual animals, species and ecosystems. Our priorities seem out of place and if zoos wish to become serious about conservation, this extravagance needs to be addressed.

Dr. Hendrich Hediger coined the term Zoo Biology and has written two books which every zoo animal professional should read at least once. They are "*Wild Animals in Captivity*" and "*The Psychology and Behavior of Animals in Zoos and Circus*". Both of these books were written over 40 years ago but remain fresh and relevant to this day. The books examine the history, philosophy, and psychology of both captive animals and animal keepers or animal trainers. In one of his other works Dr. Hediger touches on part of the issue raised by James Bousquet. At the turn of the previous century, Dr. Hediger noted that many species of animals difficult to keep or that had successfully given birth in captivity did well in certain institutions. He raises the point that many of these successes were due to keepers or other zoo staffers living on institution grounds or putting in long hours to give their charges such attention. I believe Dr. Hediger's observations give further strength to the arguments for staggering keeper shifts or establishing a keeper night crew.

This brings me to my final point, the "World of Primates" fire at the Philadelphia Zoo in December 1995. (Feb. 1996 AKF) I was the first lead keeper of the ill-fated facility when it opened in 1986. I was always close to our gorilla group - John, Snickers and Samantha. The loss of all the primates was a tragedy, but the death of those three I felt particularly deeply. The death of two breeding females and, more importantly, the three young females in the group was a serious blow to gorilla breeding programs at Philadelphia. The success of that group, which at one time was the most successful in the U.S. for having mother-reared young, may never be repeated at this facility. The new exhibit is well-designed and has numerous safety features which should make a repeat of that disaster unlikely. However, any system has to depend on the individuals who monitor it. In that regards the conditions that existed on December 23, 1995 still exist at Philadelphia as they do at many other zoos as well. When the animal staff leaves for the day the animals are entrusted to a security staff which is often not properly trained and more often not motivated enough to secure the health of the collection. Zoos should have at least some animal personnel present on site for 24 hours a day. Whether they be night keeper crews, skeleton keeper shifts or cross-trained keeper/security guards, someone with animal experience should be on duty at all times. Anything less is denying captive animals the attention they need and deserve.

One more final point, I will miss being a keeper. I admit after 24 years it was a thrill to put on the uniform each workday morning. For me, zookeeping has been rewarding, often frustrating, often monotonous, on occasion dangerous, but always interesting. Zoo keepers are an elite group and I enjoyed being part of it. Best wishes to you all.

Editor's Note: If you missed Bob's travel journals and other articles over the years, here's a recap of his contributions to AKF and AAZK Conference Proceedings.

Training Experiences at the Jersey Wildlife Preservation Trust, Oct. 1983; How I Spent My Summer Vacation, Dec. 1983; A Zookeeper's Reflections on Peru, March 1984; Reflections on Central Africa , Parts 1 & 2 & 3 Oct., Nov. and Dec 1985; Reflections on Luama, June 1987; Tsimbazaza and Ivloina: Madagascar's Zoos - Their Current Status and Potential, 1990 Conference Proceedings; Reflections on Rhum Parts 1 & 2, Feb and March 1990; Nairobi Naturally: A Zoo Keeper's Guide to the Natural Attractions of Kenya's Capital, Sept. 1992; The History and Husbandry of Mongoose Lemurs at the Philadelphia Zoo, 1992 Conference Proceedings; Ranoafana, Jan .1993; Other Places to Find Lemurs, June 1993; Connections, August 1993; In Search of the Dragon, Dec. 1995; Ujung Kulon, July 1995; Tanjung Puting: Home of the Red Ape, Nov. 1996; Way Kambus - Sumatra , June 1997; Zoos, Aquariums, Preserves and Other Natural Attractions in the Jakarta Region, Nov. 1997; On the Front Lines of Conservation: Kakum National Prk, Ghana, West Africa, Dec. 1999.

(Viewpoint accepts papers expressing opinions on zookeeping, zoos and wildlife management. However, this column is not a platform for airing grievances with your facility, its management, or internal working conditions. The AKF Editorial Board reserves the right to accept or reject material for this column, and also to edit material in consultation with the author.)

Bowling for Rhinos 2000

It's time to start planning for Bowling For Rhinos 2000. Please send in the information ASAP. Remember, if you want to win the two-week trip to Kenya, all monies must be sent to me no later than **1 September 2000** and you must be a National AAZK member in good standing. If Bowling isn't your thing, try Rock 'n' for Rhinos, Rummage for Rhinos, Run For Rhinos, or even Chapter donations are accepted! Every penny counts toward saving rhinos worldwide!!

Contact person:

Zoo/Organization:

Address:

City:

State:

Zip:

Phone:

Day:

Night:

Fax:

email:

Will you be hosting a Bowling For Rhinos event this year?

YES NO

When?

Would you like sample letters/fliers/posters? YES NO

Would you like BFR art? If so, send a DOS/Mac formatted diskette (or via <http://aazk.org>) and let me know which format it is.

YES (disk enclosed)

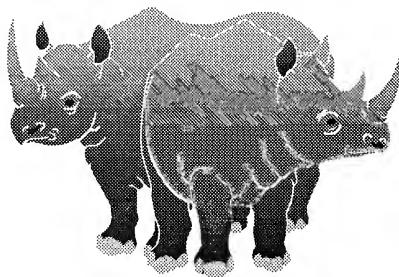
NO

How many sponsor forms do you need? (same ones as last year)

Quantity desired: _____

Additional comments:

Please Note: There is a \$25.00 registration fee required from each organization holding a BFR event (waived for first timers).



Please mail to: Patty Pearnthree c/o BFR
318 Montibello Dr.
Cary, NC 2751
(919)678-0449
ppear3@aazk.org
BFR website: <http://aazk.org>

Legislative Update

***Compiled by Georgann Johnston
Legislative Advisor
Sacramento, CA***



Zimbabwe Army Accused of Smuggling Parrots

The Zimbabwe Society for the Prevention of Cruelty to Animals has accused members of the country's army of smuggling parrots from the Democratic Republic of the Congo (DRC). The ZSPCA stated in a press release that hundreds of African Gray parrots (also known as Congo Grays) had been flown to Zimbabwe's main military base from the former Zaire on cargo planes returning from supplying troops there. A contingent of the Zimbabwe army is presently in the DRC to help that country's president fight rebels backed by Rwanda and Uganda.

The smuggled parrots are believed to have been exported to Libya via Manyame airbase, another military site. The ZSPCA said it is impossible to estimate the number of birds that have been smuggled out but claims that hundreds have been crammed in tiny cages for eventual sale in the West.

The Zimbabwe Federation of Birds Society said each bird could fetch up to \$1,500 US, depending on age and condition. A spokesman for the Zimbabwe army denied the allegations, saying that they are totally baseless and that the report is meant to damage the reputation of that country's military forces.

Source: Reuters Limited 9 January 2000

Specialists Meet to Develop Recovery Program for Ethiopian Wolf

More than 60 people representing seven different countries met in London in November to discuss measures necessary to protect the Ethiopian wolf. With fewer than 500 wolves remaining in the wild, it is the rarest wild canid species in Africa. The meeting was organized by the Ethiopian Wolf Conservation Programme and participants came from both England and the United States as well as a number of African countries.

The main result of the meeting was to raise national awareness of the plight of the wolves, the need to conserve them, and to seek ways through research, management, education and local involvement to increase their numbers. Because the wolf's natural habitat is primarily in the Amhara and Orominia Regional States of Ethiopia, all proceedings were conducted in both English and Amharic to allow full participation. One of the non-governmental groups participating in the workshop was the Canid Advisory Group of the American Zoo & Aquarium Association (AZA).

For more information about the plan regarding these wolves please contact Dr. Claudio Sillero, Wildlife Conservation Research Unit Zoology Dept., South Parks Rd. Oxford OX1 3PS, United Kingdom or email claudio.sillero@zoo.ox.ac.uk

Source: Africa News Online 30 November 1999

Elephants Gain Protection in Sri Lanka

Elephants in Sri Lanka have won the right to be well cared for by their owners through a recent court decision. From now on, anyone wishing to buy or hire an elephant has to demonstrate a bank balance capable of supporting the animals dietary needs and health care. Moreover, the person must also own "adequate land" on which to keep the elephant, including room enough to stretch and exercise and adequate shelter from the weather.

The decision, however, is limited to elephants living in zoos or in a government run elephant orphanage. It is estimated that the country has about 500 elephants living in captivity and another 4000 wild elephants, a drastic drop from the estimated population of 15,000 to 20,000 creatures in the 1940s.

Source: South China Morning Post 30 November 1999

Fish & Wildlife Waiving Fees for Some Fur Dealers

Companies that import wildlife and wildlife products typically pay a fee to the U. S. Fish and Wildlife Service (USFWS) for each shipment imported into or exported out of the U. S. These fees include inspection charges and other administrative fees. Effective in 1999, basic user fees for fur shipments that meet specific requirements will now be waived. These include shipments containing 100 or fewer raw furs; raw, salted, or crusted hides or skins; separate parts of furs, hides and skins taken from animals legally taken from the wild in the U. S., Canada or Mexico that are imported/exported between those countries.

The exemption does not cover shipments that require federal permits under federal wildlife protection laws or shipments containing furs from animals listed under CITES. However, TRAFFIC, the legislative watchdog arm of the World Wildlife Fund, is concerned that the precedent set by this user fee exemption will expand to other segments of the wildlife trade. In effect, TRAFFIC believes that the fee exemption will lessen the USFWS's inspection program, creating an increased possibility that illegal shipments of wildlife parts will bypass detection.

Source: Traffic North America vol. 2, no. 2 September 1999; USFWS News Release 29 April 1999

New CITES Secretary General Appointed

Klaus Toepfer, executive general of the United Nations Environment Programme has announced the appointment of Willem Wijnstekkers of the Netherlands as Secretary-General of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). For the past 20 years, Wijnstekkers has been responsible for wildlife trade legislation in the European Commission's Directorate General for the Environment, has been actively involved in a number of CITES committees and boards, and is the author of several papers on international environmental law.

Source: TRAFFIC North America vol. 2 no. 2 September 1999; UNEP News Release 29 January 1999

More Barbary Lions Found

Approximately a year ago, we reported in this column that a number of Barbary lions (*Panthera leo leo*), long thought to be extinct, were residing in a private zoo in Ethiopia. Now, researchers affiliated with South Africa's Hoedspruit Research and Breeding Center for Endangered Species, a government run operation, reports finding additional lions rescued from a bankrupt traveling circus. Since the identification of 11 lions in the Ethiopian zoo, another 40 members of the subspecies have turned up in Morocco and a

single lion has been found in the possession of a couple in Missouri. The Hoedspruit Center is hoping to bring all of these examples of the subspecies to one central location so that a captive-breeding program might be instigated to increase the numbers over the next few years.

Source: *African Wildlife News Winter 2000*

Wolves in Gila By End of Month

According to an Associated Press report, the USFWS is proposing to release Mexican gray wolves in remote areas of the Gila National Forest New Mexico by the end of February. The reintroduction would be in a large roadless area far from grazing allotments with an abundant prey base of elk.

Source: GREENlines Issue #1036 12/30/99

MOVING ?

Postage costs for mailing *AKF* are continuing to rise. Each time we receive an *AKF* back from the Post Office due to an **unreported** change-of-address, it costs the Association **99 cents**. Help keep this cost down by reporting your change-of-address as soon as you know it. Turning in a change-of-address card to the Post Office **does not** guarantee that the address change will be sent to our office. *AKF* is sent bulk-mail rate and is **not** automatically forwarded, so you may miss issues if you do not advise AO of address changes. These missed issues will not be sent gratis anymore, but may be purchased for the regular \$3.00 per issue price.

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Reproduction of an Imprinted Southern Ground Hornbill at Tracy Aviary

By

Heather McCormick, Aviculturist
Tracy Aviary, Salt Lake City, UT

On 22 February 1998, a Southern ground hornbill (*Bucorvus leadbeateri*) worked its way out of its shell and into the record books. The event in of itself would not have been remarkable if not for the fact that the sire of this chick was a hand-reared imprint. Besides this, there were several obstacles that stood in the way of reproduction for this bird and his mate. From 1966 through 1998, aviculturists steadily made changes and improvements in the bird's exhibit and care that eventually led to the hatching of this significant chick. This paper highlights some of the changes that took place and will hopefully help other avian managers overcome breeding difficulties with imprinted birds in their collections.

History

In 1996 the pair of hornbills lived in an exhibit with no outdoor access due to the collapse of the roof from the weight of snow the year before. Since the female was wild-caught, she was very timid and very scared of humans. A concrete block cave had been placed in the exhibit as a nesting area, but instead of using it as a nest, she would hide in it almost 24 hours a day. Historically she had laid eggs, but never in an appropriate area. She would instead lay the egg in the middle of the enclosure and return to the cave to hide. The male would then break every egg she laid. According to our records, no breeding interactions had been seen in this pair before, but they did vocalize with each other, indicating to us that this pair had some compatibility.

Changes Made

The first of the changes made was to move the pair to an exhibit that had indoor and outdoor access. To encourage the female to interact more with the male and also to make her more comfortable around her human caregivers, we did not provide any areas where she would hide — including nest sites. She calmed down rather quickly in her new surroundings. At that time we gave her several hollowed out logs to use for nesting. Some were upright, some were on their sides; some were inside, some were out in the yard. None of them were large enough for her to completely hide in. While sitting in any of these nests, we could see her and she could see us. She chose to spend the majority of the days roaming about the yard with the male, and would sleep in one of the inside nest logs at night.

Another change that had to take place was in the treatment of the male. This bird had been an aviary favorite of both visitors and staff for years. He can be very aggressive, but his tendency to defend his territory was often misinterpreted by the public for friendliness. People would call him by a pet name, throw treats to him, and over all treat him like a pet. We asked the staff to stop referring to him by his pet name and cease giving him any special treatment. This would encourage him to interact more with his mate and less with humans. We also watched closely for visitors trying to feed the bird and would explain to them the detrimental effects that visitor feedings could have on the birds.

Results

In January of 1997, the female did not exit her nest log first thing in the morning when the aviculturist came in to service the birds. In fact, she stayed in the nest for 20 minutes

while the aviculturist worked all around the exhibit before she ran outside. Noting this change in behavior, we concluded that she might be close to laying an egg. We immediately went to work blowing out chicken eggs, an filling them with Tabasco® sauce. This is an old trick from The International Crane Foundation to discourage egg breaking. We placed a Tabasco® egg in the middle of the enclosure and the male immediately broke it. We repeated this the next day and noticed the male hesitated a bit before breaking the egg. On the third day we were all surprised to find an intact hornbill egg. The real significance of this event was the fact that the female had actually laid the egg in the nest and would not leave the nest even while we were in the exhibit.

At first we left the egg with the female, but when she would leave the nest to defecate or eat she had a difficult time lowering herself back down into the nest without harming the egg. We found a few toenail holes in the egg after a couple of days. At that time we pulled the egg for artificial incubation and gave her a dummy egg to incubate in the nest. After a week of incubation we candled the egg and discovered it was fertile, indicating to us that our pair were more compatible than we had initially believed. That chick ultimately did hatch (with some assistance due to a dried membrane) and was put back in the nest with the female for parent-rearing. The chick was doing well and he started to put on weight, but on the fifth night the chick disappeared. We strongly suspect the sire ate it.

The 1998 egg laying season began the same as the last year's had - with the Tabasco®-filled eggs. Once again we got a fertile egg that we incubated in our incubator while the female sat on a wooden dummy egg. While the chick was developing in the egg, the aviculturists were busy building a side enclosure to the hornbill area. The nestlog was moved adjacent to the dividing fence between the male and female. By having the nest against the fence, it enabled the male to continue to feed his mate and potential offspring through the chainlink fence. When the chick hatched in February it was returned to the nest. Since the female and the male were relatively inexperienced parents, we pulled the chick for supplemental feedings and weighing. The male did his part in the rearing by feeding the female through the fence and the female would in turn feed the chick.

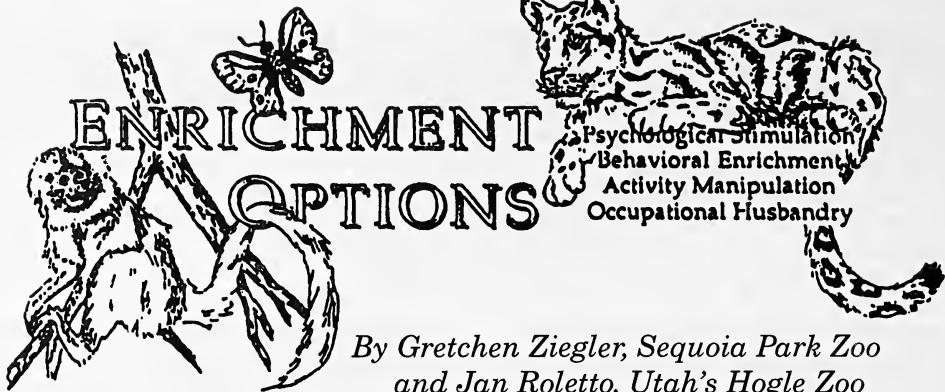
Over the next several months we did a gradual introduction of the father to the chick, which at first went well. Although eventually the male would attempt to mount the chick and ultimately became very aggressive towards it. Shortly after determining the sex of the chick was female, she was shipped to the Miami Metrozoo.

Conclusion

Many things were learned from this experience. We now know that we can successfully parent-rear a southern ground hornbill despite the aggressive tendencies of the imprinted sire. We also know that our imprinted male can participate in the rearing of the chick without being given access to it. The fact that the chick is a well-adjusted hornbill suggests to us that the supplemental feedings by the aviculturists did not result in an imprinted bird.

1999 Conference Proceedings Available

A limited number of Proceedings from the 1999 AAZK National Conference in Portland, OR are now available on a first come-first served basis. Order forms may be found in the December 1999 and January 2000 issues of *Animal Keepers' Forum* or you may order by credit card by phone when you call 10800-242-4519 (US) or 1-800-468-1966 (Canada)



When designing enrichment for birds, there are a few key points to remember. Most mammals rely chiefly on their powers of smell and hearing. In birds, however, the power of vision is almost always the most important sense (turkey vultures, kiwis, and a few other species are notable exceptions). Also, contrary to the inappropriate slur "bird brain", birds in general have large brains relative to their body mass.* (Anyone with experience with psittacines can attest to this!)

It is amazing to see how responsive birds can be towards enrichment! The ideas presented in this column show great creativity towards a variety of avian species.

Condors: rats or beef hearts in cardboard boxes (without any tape or staples); Christmas trees to drag around; piles of leaves; pumpkins; lettuce heads.

Cranes: rake up a large pile of leaves and sprinkle mealworms throughout-the Sandhills spent at least an hour foraging; shoebox with mealworms inside; lettuce heads.

Parrots: phone books; assorted boxes; hanging fruit throughout exhibit; browse.

Ground Hornbill: small basketball to bat around; hanging dead rats from trees (about 3-4ft. from the ground) to work for their meal; pumpkins; rats frozen in a block of ice.

Waterfowl: fresh lettuce, preferably romaine or "darker".

Pheasants: live insects; Christmas trees for cover (please note that some pine trees are reported to be toxic to birds, so refrain from giving to those who like to chew).

Corvids: blocks of wood with holes to encourage caching; PVC mealworm/cricket feeders.

--Kristine McCue, Associate Curator
Tracy Aviary, Salt Lake City, UT

(The following submissions were taken from the enrichment listserve, with permission from the authors.)

Ostrich: parrot toys hung on the fence; hose baths or sprinkler system; browse hung along the fence.

Ground hornbills: forage feed, live insects; hide food in hay piles; plastic parrot toys; cardboard boxes (with or without treat foods); dirt piles for digging; partially rotted logs for destroying; hand tossing food items; mealworm feeders (PVC tubes with removable caps at both ends with holes drilled at various points then filled with insects); paper mache balls with or without treats inside.

Storks: fish floated in their pools; kiddie pool with about three inches of sand on the bottom covered with about one inch of water and insects sprinkled on top; forage feed live insects.

Cranes: peanuts; sand/water pool as per storks; broadcast small chunks of tubers throughout the exhibit (potato, yam, jicama); forage feed live insects; pieces of sod for them to destroy.

--Jan Steele, Animal Collection Manager
Oregon Zoo, Portland, OR

Parrots: I use plain grape vine wreaths of all sizes for my parrots. They use them as swings, perches, etc. until they are pulled apart and shredded. They last a little longer if you attach food, toys or other "shreddables".

--Karen Veleta, Bird Department
Louisville Zoological Gardens
Louisville, KY

* References

Gill, F.B. 1990. Ornithology. W. H. Freeman and Company.

Perrins Dr. C. & Dr. A.L. Middleton., ed. 1985. The Encyclopedia of Birds. Facts on File, Inc.

(Ideas appearing in this column have not necessarily been tested by the editors for safety considerations. Always think ahead and use good judgement when trying new ideas. Eds.)

You are invited to submit material for the Enrichment Options Column. This might include recipes, toys, puzzle feeders, olfactory enrichment ideas, etc. Drawings and photos of enrichments are encouraged. Send to: AKF/Enrichment Options, 3601 S.W. 29th St., Suite 133, Topeka, KS 66614.

Visit the new AAZK Enrichment Website - www.enrich.org/aazk or to join the Enrichment Listserve by e-mail jackbell@humboldt1.com

An archive of past postings can be viewed at www.caza.org/enrich.



REACTIONS

A Question and Answer Forum for the Zoo Professional on Crisis Management

Question

What happens when crisis management fails? Part II

Comments

I was asked to expand on the role of the media and how that relates to a facility's response after a crisis management situation fails. So, I am providing more detail on this particular topic.

The media will usually fall into two classes, friend or foe. How the media interacts with your facility will have a lot to do with the nature of your professional relationship that has been developed. In other words, what kind of rapport has been established previous to the event.

It is the responsibility of an institution to develop a positive working relationship with the press. Every institution should have a "point person" who the media can come to with their questions. Conversely, the point person should in turn be able to go to the press as well. Yes, I know that sounds strange, but think about it for a minute. How many times have we read something or saw an interview only to realize that it was not providing the complete story or maybe it was taken out of context. Stay in the industry long enough and you realize the terms and points of view that are commonplace with us are alien to the people outside the profession. A good example would be, remember back when you were in college and how that one particular professor always "got it", but couldn't understand why you "didn't get it". It's the same thing, you have to have a frame of reference. Cultivate a positive relationship and the press will give you the benefit of the doubt.

As a general rule, expect more moderate coverage from mainstream news publications and sensationalized coverage from alternative sources. The exception to this will be, of course, "avengers of truth" who have decided to make your institution their private cause. Overall, most agencies are looking for a competitive story. If you don't provide your side, then who will? The era of "No comment" has died with the advent of the information age. Simply put, your side of the story should be out there and nobody is better qualified to do it than the institution itself.

Professionally I believe one of the biggest errors in judgment that can be made is to designate a “point person” who is from public relations or marketing. The press expects to speak to an animal professional in a management position such as a Director or Curator, not a diplomat. They can tell the difference.

After an incident has occurred, the first thing the point person will need is the entire story directly from the participants, without any editing (another reason why this person should be an animal manager). A written statement should be developed and a press conference called. This shouldn’t be hard, since they’re probably already at the front gate. Always consider your personal appearance when you meet the press. Be well-groomed and composed as a professional should. Speak clearly and firmly—if you don’t believe, why should they? Two important points: One, never lie or misinterpret the facts. It will come back to haunt you. Two, never wear a suit. When was the last time an animal professional wore a suit outside of a society fundraiser? Suits imply that you’re probably a bureaucrat and never go near the animals.

Some basic legal points that you will want to probably cover with your attorneys in advance of the situation as you develop policy: It is considered bad form to release the names of injured or deceased individuals until the family or next of kin has been notified. Never say anything that could be taken as libelous or slanderous. Presenting the facts are one thing, how far they should be expanded upon is another point altogether. Never fix blame, that is what the courts and federal agencies are for. Develop policy and guidelines in advance of the event, not after it has occurred.

Remember to provide timely updates and interviews to keep your viewpoint out there in the public eye. It’s important to realize negative publicity will last after the story finally dies. Also, remember your staff. They are the people who make you look good. Keep them informed in staff meetings and provide counseling for anyone who requests it. Listen to them and never forget you were once a Zoo Keeper yourself.

Next Month: What level of impact do emotions have in the zoo environment?

If you would like to submit a question for this column or have comments on previously published materials, please send them to: AAZK, Inc., 3601 S.W. 29th St., Suite 133, Topeka, KS 66614 Attn: Reactions/AKF.

(About the Author: Since 1985 Bill has been active in the fields of science, zoology and wildlife management. His education and experience include a B.S. in wildlife management and post-graduate studies in zoology, Lab and Museum Assistant, Shoot Team Leader, ERT Member, Large Mammal Keeper, Senior Keeper, and Zoo Curator at various zoological facilities. His area of research is crisis management in zoological institutions, which draws upon practical experiences and training as a Rescue Diver, Hunter Safety Instructor, NRA Firearms Instructor, and Red Cross CPR/First Aid Instructor.)

The Hand-Rearing and Reintroduction of Chip and Dale

By Grant Tkachuk, Animal Keeper
The Valley Zoo
Edmonton, Alberta, Canada

Introduction

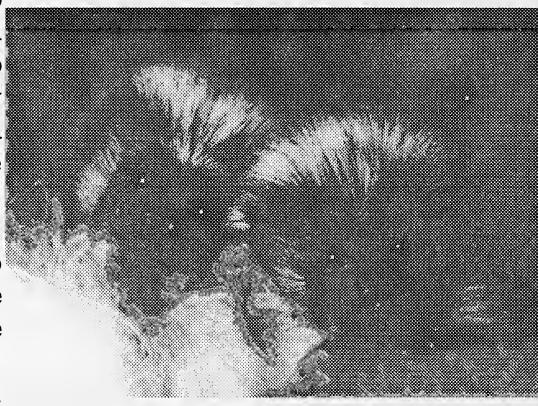
In September 1998, the Edmonton Valley Zoo was excited to welcome from the Montreal Biodome a family of SSP® (Species Survival Plan) Cotton-top tamarins (*Saguinus oedipus*). Over the next year the new arrivals, consisting of a male and female pair and their two daughters, became a prized educational and promotional asset to the zoo. The two daughters grew strong and healthy, and less than a year after the family's arrival, the mother was pregnant again.

On 5 April 1999, she gave birth to what was originally thought to be twins. Later that morning, one of the infants was found on the floor of the exhibit cold, listless, and near death.

It was immediately taken from the exhibit, warmed up with a heating pad, and rehydrated. Finally it came around and seemed to be doing well. We decided to return the infant to the exhibit, in hopes that the pair would continue to care for it. Once the infant was placed into the nestbox in the exhibit, the mother grabbed and began to consume it. There was little that we could do. We started to worry about the well-being of the other infant.

The next day, a second infant was discovered. The pair had produced triplets. Despite the unfortunate incident the day before, the family seemed to be adapting well to the new arrivals. We observed the infants nursing periodically throughout the day. Both the mother and father were the primary caregivers for the first week. In the second week, we observed the infants spending most of the time on the male and juvenile daughters and seeming to visit their mother only during feeding. The infants continued to grow strong and healthy.

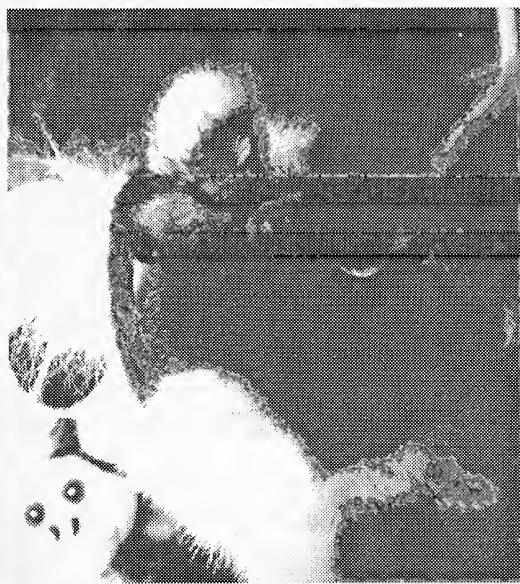
On Sunday, 18 April, 1999 at 1800 hours, the mother tamarin was found on the floor of the exhibit motionless. She was removed and examined but there were no signs of life. The necropsy reported severe trauma to the abdominal area causing her spleen to burst; she died within two hours. (Our guess was that she had slipped and fell from a tree branch in the exhibit.) The two infants would



Chip and Dale

Photos by Grant Tkachuk

have to be raised by hand which would be a great challenge considering the zoo's inexperience and lack of materials or facilities. However, despite the odds, our staff, with the enthusiastic help of the University of Alberta Hospital, the instruction provided in the SSP® manual, and our team's resourceful and somewhat experimental approach, were able to raise and re-introduce the two infant cotton-top tamarins successfully.



Infant inside incubator on suspended surrogate (*Photos by Grant Tkachuk*)

The Hand-Rearing

We quickly prepared a hospital incubator for the two infants. We rounded up three stuffed tamarin toys to use as surrogate mothers. Our Adopt-An-Animal program uses such stuffed animals to give away to the adoptive parents. One of the surrogates was suspended in the middle of the incubator with soft cotton rope and elastic bands so that it would move and bounce a little. The other two surrogates were used to help us retrieve and handle the infants during feedings. (NOTE: Do not wash the surrogate after the infants have been using them. They react by throwing little tantrums!) The incubator's temperature was set at 30°C (86°F), and its humidity between 70-80%. We lined the incubator with sheets and towels. (The towels had to be removed after the infants started exploring and getting their fingers tangled in the fraying edges.)

By 2100 hrs all preparations had been completed. As we prepared to pull the infants, we found both on the back of one of the juvenile daughters. (This female soon became the dominant female of the group). We trapped the group in the nestbox and separated the female with the infants. The father was very difficult to separate; he kept threatening us and then returning to the babies. It appeared as though he was trying to get them to climb onto him.

Once they were separated, we weighed the infants and examined them for any injuries. They each weighed 50 grams (1.76 oz.) One of the infants had received a small cut above his eye when, during his capture, he got in the way as the female tried to bite me. The wound was not serious and was quickly cleaned up.

Feeding Methods

We consulted the cotton-top tamarin feeding schedule in the SSP® manual, prepared by Anne Savage, PhD. She recommended Primilac® as a milk replacement, but since we didn't have immediate access to this, we used Similac® (regular) as a temporary substitute. We measured out 2.0ml (0.1 oz.) portions of straight Similac® for each baby tamarin and microwaved it to just above room temperature. We first used an elongated plastic dropper, but because it only held 1.5ml and the fluid cooled too quickly, we later replaced it with a Nurset® bottle and nipple (designed for cats and dogs). However, the nipple was too big and too hard. We then used a 5cc (1.7 oz.) syringe. This worked well, but we wanted the infants to suck on their own. Next we tried a wallaby nipple (with the first inch cut off), which worked well but kept coming off the syringe. Finally, one of the keepers brought in a kitten hand feeding set. The nipples proved to be ideal; they were very small, soft and fit perfectly over the 5cc syringe. With this final method we could put minimum pressure on the plunger and the infants could suck on their own.

One problem arose: the infants bloated after feedings. We solved this by gently bouncing the two infants on their surrogates for 10-15 minutes after each feeding.

The public, watching through the nursery windows, reacted to this with much amusement, responding with comments such as, "Look at those people bouncing teddy bears." The babies were so small that they could not be distinguished from the surrogates. We continued to "bounce" them after each feeding until they became more active.

Originally we stimulated the two infants to urinate and defecate after each meal, but we found that if we did so before each feeding, they would be hungrier.

Finding a Substitute for Primilac®

With the infant tamarins set up in their incubator with their surrogates and the feedings going fairly smoothly, we needed to find Primilac® and a proper



Infant being fed with kitten hand feeding nipple. (Photo by Grant Tkachuk)

substitute until it arrived. A couple of keepers spent the next day, 19 April, on the phone calling almost every zoo in North America and all of the hospitals and pharmacies in the city. The University of Alberta Hospital's pediatric ward generously took on the challenge. They quickly researched Primilac® and its contents and soon began to work on a replacement formula. They discovered that by adding protein supplements to Similac®, they could duplicate Primilac®. They found that Similac® (regular) was an adequate substitute, it just lacked protein.

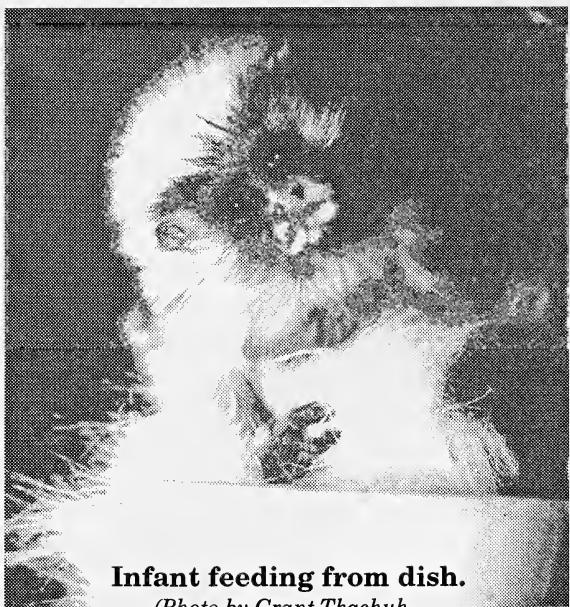
Unfortunately, we never had a chance to use the substitute for Primilac® because, on 21 April, the actual Primilac® arrived. First we fed the infants straight Primilac®, but they didn't like it, so we mixed half Similac® with half Primilac®. Two days later they accepted straight Primilac®. We tried to follow the SSP® manual as much as possible, but found that we had to increase the amount at each infant's pace, increasing the amount whenever they consumed all the allotted amount for at least one full day. Using the manual as a guide, we had an idea how much they should consume at certain ages, so we could increase their amount gradually, depending on them. We also kept a logbook of their dietary intake and weights. We also used a dry-erase board to note these changes, for quick and easy reference by all staff members. To help us tell them apart, we had to mark one of the infants, who was soon nicknamed Red-head. Once they were "out of the woods", we named them Chip and Dale, which suited them perfectly!

On 22 April (when they were 17 days old), we noticed blood in their stools. This continued for a couple of days. On 25 April, we decided to decrease stimulating them to urinate and defecate to three times a day. Our veterinarian thought that it was just the result of the changes in their formula; after they had been on straight Primilac® for a couple of days, we no longer detected blood in their stool.

We weighed the infants once a day to monitor their weight gain. Because we would only handle an infant when it was attached to a surrogate, we weighed their surrogate first and then subtracted that weight from the combined weight of the infant and the surrogate to which he was attached. Unfortunately, our scales only balance to the closest 5 grams, so we didn't notice any change in weight until they were 24 days old and weighed 60 grams (2.12 oz.)

On 12 May (37 days old), we tried adding yogurt to the Primilac® formula. We dripped the mixture into a spoon and encouraged them to lap at it. Once they were used to lapping up their formula we began feeding them in a small dish.

On 13 May (38 days old), we reduced the temperature in the incubator to 26.7°C(80°F). We had kept the incubator at 30°C up until then because they ate better and were more active. We had tried reducing the temperature to 26.7°C a week earlier, but they became less active, huddled against each other, and lost their appetite.



Infant feeding from dish.

(Photo by Grant Tkachuk)

Throughout the weeks that followed we occasionally brought Chip and Dale on their surrogates to the adult tamarins in the exhibit and let them see each other through the exhibit window. The adults were very curious about the infants, especially the infant's father, who flicked his tongue towards them and then turned to us with grimacing facial expressions. We would let them visit each other for about 15-20 minutes. We found that anything longer than this would cause the group to become more active and agitated.

Reintroduction

On 13 May (38 days old) we decided to reintroduce them to the group since they were beginning to take solid foods. A howdy cage was constructed, consisting of two bird cages, one inside the other. This ensured the infants' safety in the event of any aggression from the adults. The inside cage was covered with a small gauge mesh so that the adult tamarins' fingers could not get through. The floor of the cage was lined with blankets. We suspended one of the surrogates in the middle of the inside cage with three pieces of cotton rope, and placed the other surrogate on the floor. We also put a couple branches in the cage so that the infants could get used to balancing and climbing. We hung various lengths of knotted cotton rope from the top of their cage which they enjoyed jumping and hanging on to.

On the first day of reintroduction, we had a staff member sit and observe the infant tamarins and record their behavior and movements. At first we left the cage in the exhibit for only one hour and then removed it for the day. Each subsequent day we increased the amount of time that the infants remained in with the adults. By the end of the week, they were staying in the exhibit with the adults throughout the day. Regular checks were made to monitor significant behaviors, such as aggression or acceptance. During the day, the infants were removed from the howdy cage in the exhibit only for feedings, and at around 2000 hrs. they were returned to the incubator for the night. In the second week, to promote more interaction with the adults, we removed the center cage, leaving the infants in the outer cage. By the third week, we were leaving the cage in the exhibit 24 hours a day, removing the infants only for feedings. Also in the third week, we started introducing various solid foods to their diets: we mixed rice baby cereal, jarred baby fruit, and egg with the *Primilac®* formula. During this three-week period, the adult tamarins were seen climbing on top of

and around the howdy cage and making chirping and softer cooing sounds. We perceived these vocalizations as signs of the infants' acceptance into the group.

On 1 June (57 days old) we chose to leave the infants' cage door open. We suspended a large plastic bread-basket in the exhibit to hold their food tray and water dish. One bail of wood wool (Excelsior wood or packing wool) was spread over the entire floor of the exhibit, creating about one foot of cushion to protect the infants if they fell. Branches and various lengths of rope were added to the exhibit at different heights. On this day we began weaning the infants off the Primilac® (decreasing it by 1ml each subsequent day). The day went very well. Chip and Dale seemed very curious; they often ventured from the cage but returned to their surrogate if an adult tamarin moved too quickly. In the evening the cage door was closed, leaving the infants to sleep on their surrogate.

Over the next few days, Chip and Dale spent more and more time outside the cage, with the adults hovering close by, smelling and watching them with much attention. On occasion, the adults tried to encourage the infants onto their backs, by tongue flicking and presenting their backs to the infants. Chip and Dale, however, did not accept the offers and retreated to their surrogate back in the cage. On 4 June (60 days old), Chip and Dale were seen sleeping one on top of the other in the nestbox with the adults. Their surrogate was still in the howdy cage.

To encourage them to interact with the adults, we removed the surrogate from the exhibit for a couple of hours for each of the next two days, and then for half of each day. Eventually, we removed the surrogate completely during the day, except during feedings, and returned it to them to sleep on at night.

On 6 June (62 days old), Chip and Dale were weaned off of the Primilac®. However, we continued to supplement their diet with 1ml of yogurt, 1ml jarred baby fruit, 2 ml of the baby cereal, and 5g of egg, with small pieces of fruit and cooked yam (a total of 15g [.53 oz.] per infant). They were fed in a small dish two times a day. They had been eating from the adults' food portions ever since the cage door was first opened.

On 12 June (68 days old), for the first time Chip and Dale were found sleeping on their father's back. We removed the howdy cage permanently from the exhibit and used their surrogate only for feedings. Chip and Dale eagerly transferred onto the surrogate twice a day for feedings; after feeding them, we had a hard time peeling them off. The father often rushed forward to retrieve them, giving us grimacing looks.

As each week passed, Chip and Dale spent less and less time riding on the backs of the adults and more and more time exploring and playing, only riding on the back of an adult for security or while sleeping. All of the adults were very protective and attentive to them. On occasion the adults were seen offering food to them. And Chip and Dale were also interested to see what was in the others' mouths, and even our mouths.

Conclusion

At 90 days old, Chip and Dale had their last supplemental feeding. We did, however, give the group three feedings per day to ensure that the two youngest were getting enough to eat. Chip and Dale were by now completely integrated into the group. We will continue to monitor their weight for the next two months, or until they no longer attach to the surrogate.

When we visit them in their exhibit to feed them or simply observe, the young ones still recognize us. Dale is particularly affectionate. We often have a difficult time peeling him off our arms. I think that the biggest problem with hand-raising primates is imprinting. While we were aware of this throughout the process, we seem to have solved the problem. Chip and Dale constantly look to the adults for reassurance, and as each day passes they show less and less interest in us. They seem to act more and more like parent-raised tamarins.

I believe that the hand-rearing and reintroduction was a complete success, but then again, as they say, only time will tell.

Acknowledgments

The hand-rearing of Chip and Dale was by no means a one-person job. It took the work of a large, wide-ranging group, who all played vital roles in Chip and Dale's survival and well-being.

I would like to thank all the staff at the Valley Zoo for all that they did and sacrificed during the hand-raising of Chip and Dale. I feel very privileged and proud to work as a part of such a dedicated and passionate team. I would also like to thank Anne Savage, for putting up with all our phone calls, and the pediatric ward of the University of Alberta Hospital for their milk supplement research.

Finally, I would like to thank Chip and Dale. I look forward to watching them mature and perhaps one day be parents themselves.



The Tamarin Family is reunited.

(Photo by Grant Tkachuk)

Timeline

with changes in feeding and other significant occurrences

April 18 (13 days old)	<ul style="list-style-type: none">• Infants pulled from adults• Offered Similac (regular)• 2.0ml per feeding• 8-9 feedings per day• Stimulated to defecate and urinate after each feeding
April 21	<ul style="list-style-type: none">• Primilac arrived• Offered straight Primilac, except last feeding of the day (half Primilac/half Similac)
April 22	<ul style="list-style-type: none">• Blood in stool
April 23	<ul style="list-style-type: none">• Increased amount of formula to 2.5ml per feeding
April 24	<ul style="list-style-type: none">• Offered straight Primilac• Blood in stool
April 25	<ul style="list-style-type: none">• Decreased feedings to 7 times per day• Increased amount of formula to 3.0ml per feeding• Blood in stool• Decreased stimulation to 3 times a day
April 28	<ul style="list-style-type: none">• Decreased feedings to 6 times per day
April 29	<ul style="list-style-type: none">• Increased amount of formula to 3.5ml per feeding
May 2	<ul style="list-style-type: none">• Increased amount of formula to 4.0ml per feeding
May 8	<ul style="list-style-type: none">• Increased amount of formula to 4.5ml per feeding
May 12	<ul style="list-style-type: none">• Added 1.0ml of yogurt to formula• Introduced spoon and small dish for feedings (to encourage lapping)• Increased amount of formula to 5.0ml per feeding
May 13 (38 days old)	<ul style="list-style-type: none">• Reintroduced infants to group in howdy cage for 1 hour

May 16	<ul style="list-style-type: none"> Added 1.0ml of rice baby cereal and mixed with 1.5ml of yogurt and 5.8ml Primilac, equalling 8.3ml per feeding Decreased feedings to 5 times per day
May 19	<ul style="list-style-type: none"> Added 1.0ml of jarred baby fruit mixed with 2.0ml rice baby cereal, with 1.0ml of yogurt and 6.0ml Primilac, equalling 10.0ml per feeding
May 24	<ul style="list-style-type: none"> Decreased feedings to 4 times per day Decreased stimulation to 1 time per day
May 27	<ul style="list-style-type: none"> Added 5g of boiled egg to 10.0 ml mixed formula
May 31	<ul style="list-style-type: none"> Decreased feedings to 3 times per day Last day of stimulation
June 1 (57 days old)	<ul style="list-style-type: none"> Door of howdy cage left open during the day Surrogate removed for half of the day Added 5g of small pieces of fruit (banana, melon, apple, pear) and 1 soaked Tamarin/Marmoset block to mixed formula (all mashed together), equalling 25g per feeding Decreased amount of Primilac in mixed formula to 1.0ml per day
June 5	<ul style="list-style-type: none"> Observed eating from adults' dish Decreased feedings to 2 times per day Diets no longer being mashed together
June 6	<ul style="list-style-type: none"> No longer including Primilac in diet Added cooked yam to mixed diet, equalling 15g per feeding
June 10	<ul style="list-style-type: none"> Adults' feedings increased to 3 times per day because infants are also eating from the adults' dish, as well as their own
June 12	<ul style="list-style-type: none"> Infants observed sleeping on father's back Surrogates removed permanently (only used for feedings) Howdy cage removed permanently
June 13	<ul style="list-style-type: none"> Offered mealworms
July 4 (90 days old)	<ul style="list-style-type: none"> Last day of supplemental feedings

Changes in Chip and Dale's Weights from April to August 1999

DATE		AGE (in days)	CHIP'S WEIGHT (in grams)	DALE'S WEIGHT (in grams)
April	18	13	50	50
	29	24	60	60
May	6	31	70	65
	8	33	70	70
	14	39	85	80
June	5	61	130	135
	10	66	125	120
	12	68	140	145
	16	72	140	135
	26	82	165	160
July	1	87	180	175
	4	90	195	175
	9	95	180	170
	12	98	185	180
	15	101	180	180
	16	102	175	170
	18	104	190	170
	22	108	195	185
	24	110	195	170
	29	115	205	190
August	2	119	210	195
	3	120	195	185
	5	122	215	205
	16	133	215	200

Chapter News Notes

Jacksonville Zoo AAZK Chapter

Newly elected officers from the December 1999 election are:

President.....Amanda Rice
Vice President.....Christopher Falanga
Sec/Treas.....Samantha Floyd

During 1999 the Jacksonville Zoo AAZK Chapter held many events and raised money for two worthy organizations. Our Bowling for Rhinos event was very successful raising over \$1,500.00 for the Lewa Wildlife Conservancy in Kenya, and Ujung Kulon National Park in Java, Indonesia. We also collected \$98.00 from our Rainforest Meter which we sent to the Center for Ecosystem Survival.

Our Chapter, with the help of the Jacksonville Zoo, was able to send one representative to the 1999 Portland National AAZK conference. Our representative not only attended the conference, but also presented a paper on bonobo reintroduction. We also held a few fun events during the year, some made money for the Chapter and some were just for fun. Those included two softball games, face painting during our zoo's annual Spooktacular event, planted an enrichment garden and took a day trip to St. Catherine's Island (a Survival Center for Endangered Species.)

Our Chapter is looking forward to a fun-filled year of events during 2000!

--Amanda Rice, President



The Utah Chapter AAZK

Greetings from the beehive state! The Utah Chapter has held elections for the new year. Our new officers are as follows:

President.....Bethany Lutz
Vice President.....Mark Natt
Secretary.....Syeanie Jocham-Natt
Treasurer.....Elizabeth Larsen
Liaison.....Jennifer Apa



We have a very busy year planned with Bowling for Rhinos on May 13th, our Cheetah Cha-Cha scheduled for Sept. 2nd, as well as Earth/Conservation Day celebrations, guest speakers from Brigham Young University, The Nature Conservancy, and other fundraiseing activities.

We are also planning an interscholastic fundraising challenge for the Center for Ecosystem Survival Rainforest and Coral Reef Parking Meters.

The Utah Chapter AAZK hopes for a productive and successful first year of the new millennium.

--Jennifer Apa, Chapter Liaison

Point Defiance Zoo & Aquarium AAZK

Thanks to our small but dedicated group of AAZK members, the Point Definance Zoo and Aquarium Chapter had a very productive year. The Chapter planned and hosted a Summer Celebration attended by 110 AAZK members from six other institutions in Washington and Oregon.

The Chapter's major fundraising effort, a holiday photo booth, netted nearly \$8000.00 this year, thanks to the amazing patience of our young reindeer! These funds were well spent on a variety of projects including conference sponsorship for Chapter members, animal acquisition, enrichment equipment, and contributions to the PDZA Library.

The Chapter was also able to make donations to the clouded leopard SSP, other AAZK Chapters and the AAZK general operating fund. Additionally, the Chapter continues to maintain Center for Ecosystem Survival Rain Forest and Tropical Reef Conservation Parking Meters that raises over \$1000.00 annually.

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To Be Continued....send us your printable thoughts!



Our goals for this year include greater funding for global conservation projects and providing more conference sponsorships for our members. We also hope to encourage another Northwestern Chapter to host the 2nd Annual Summer Celebration!

--Karen Povey, President

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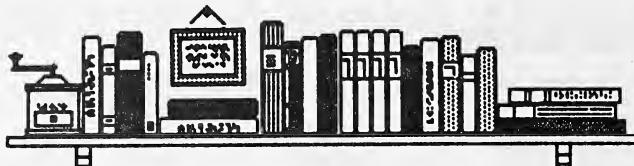


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Book

Review

Beneath the Canopy: Wildlife of the Latin American Rain Forest

Photographs by Kevin Schafer

Text and captions by Downs Matthews

Chronicle Books, 1999

85 Second Street, Sixth Floor

San Francisco CA 94015

Softbound - 143 pages \$24.95

*Review by Anders Wirth, Relief Keeper
and Ann Kilby, Zoo Volunteer
Sequoia Park Zoo, Eureka, CA*

We found much to enjoy and much to wish for in this large-format, lay-audience book offering glimpses of animals and landscapes representing life in diverse rainforests spread through the tropics of our hemisphere. A brief introduction is entitled, "Tropical America"; the body of the book is divided into three sections, i.e., "Forest Floor", "Understory", and "Canopy". Also provided are a hand-drawn full-page map (by Tony Morse), a list of organizations active in conservation efforts for the subject-area rainforests, and an index. Impressive photos range from double-page or nearly so (nine), through approximately full-page (about 30), medium-sized (about 55), to small (about 75.) Most photos are captioned (several sentences each), and each section includes text; these two sets of written material together touch very briefly upon an ambitious range of topics for the general reader.

Visually, the book could well be titled, "Invitation to the Rain Forest". Kevin Schafer has collected images distilling one experience after another of encounter and fascination with the whole forest and with the individual beings. His pictures convey an invitation to join in a visceral connection, and in pursuing an active and caring relationship with the members of that part of the biosphere.

Comparing this book with a number of other nature books from Chronicle, books often finely crafted and also visually lush, it appears that this time the publisher opted for a "sampler" book with abstractly defined design specifications. The result was to put Mr. Schafer's images into a book format that detracts from their strength, and to pair them with writing that does not match them in depth of thought. Excited by the pictures, some of animals we had seldom or never seen before, we wanted to see much more picture and much less prodigal use of blank space overall. Also, the text and captions are too expansively spaced on the pages. Many of the small pictures, a number of them juxtaposed in meaningless colorful patterns on the page, could have been reproduced larger (and in organically meaningful arrays), increasing overall impact a lot.

Zoo education officers, always looking for a picture of That Animal or That Kind of Place, may want to look closely at this book. For the rest of us, it is essentially a package of the visual treats we love, most easily savored a few at a time in contemplative moments.

A Guide to Lizards

By Michael Waters, Michael Voyce, Peer Zwart, Fredric Frye

Produced and Distributed (in the UK) by

The Unit for Veterinary Continuing Education

The Royal Veterinary College

Royal College Street

London, UK NW1 OUT

Distributed outside the UK by Krieger Publishing Co.

PO Box 9542, Melbourne, FL 32902-9542

*Review by Sandra C. Wilson, DVM, MS
Veterinarian, Sedgwick County Zoo, Wichita, KS*

This guide for veterinarians is produced by Britain's Royal Veterinary College. The CD-ROM format allows great flexibility in the presentation of the material, and this guide uses a combination of text, illustrations, photographs, video, and sound. The material is organized in four sections: Basics (biology and husbandry), Procedures (examination, diagnostics, therapy, anesthesia, and surgery), Diseases (metabolic bone disease, renal disease, cystic calculi, dystocia), and Resources (client care sheets, species details, formulary, references, etc.).

Each section includes several chapters, which take about 10-15 minutes to complete. A quiz at the end of each chapter helps the reader assess their progress, and correct answers are thoroughly explained.

The Basics section is a good introduction for practitioners with little or no experience with reptiles. The Procedures and Diseases sections are also fairly basic, but thorough, and the reader has the opportunity to learn using the multimedia approach. Videos depict everything from normal posture in a lizard to intubation for gas anesthesia. "Hotwords" are used throughout, allowing the reader to click the mouse for a quick definition or explanation of a term.

The Resources section is one of the most useful, containing details on nineteen of the most common lizards found in captivity. Also in this section are sample forms, reference ranges for hematology and chemistry values, useful internet sites, and a drug formulary.

A Guide to Lizards is easy to use, and would be a useful reference for the private practitioner, veterinary technician, and reptile enthusiast.

AAZK Has Moved !!!



Effective NOW our address is:

3601 S.W. 29th St., Suite 133, Topeka, KS 66614.

Phone and Fax remains the same.

AZA Regionals Information



The AZA 2000 **Eastern Regional** will be hosted by THE ZOO in Gulf Breeze, FL from 22-25 March.

Theme for the conference will be "ZOOvolution - Where do we go from here?". A number of hands-on workshops are planned including a session on animal enrichment and an animal training workshop. During the conference the ZOO will be hosting a modular traveling exhibit - *Reptiles: The Beautiful and the Deadly* - exhibiting vipers, cobras, pythons, monitors, etc. produced by Clyde Peeling's Reptileland, an AZA-accredited specialized zoo with over 30 years experience in interpreting and exhibiting reptiles. Mr. Peeling will be hosting a workshop on designing creative reptile encounters.

In keeping with the ZOOvolution theme, presentations focusing on zoos of the past are welcome. Other topics include: positive interaction with the media, changes in trends for exhibit design and graphics, and sister zoo programs. If you have ideas for workshop topics, please send a short proposal to the address below.

You could win a free safari by attending the Eastern AZA Regional. All those attending the final banquet will be entered into a drawing for a free safari sponsored by Fun Safaris.

Abstracts for papers, posters or workshops should be submitted to: Linda Pastorello, Program Chair, The ZOO, 5701 Gulf Breeze Parkway, Gulf Breeze, FL 32561. Please include your name, title, affiliation, address and title of your presentation. Also include a list of equipment needed for your presentation. Abstracts may be e-mailed to: education@the-zoo.com For further info contact Linda or Jean Benchimol by calling (850) 932-2229 or check out their website at www.the-zoo.com

The AZA 2000 **Western Regional** is being hosted by the El Paso Zoo from 5-8 April. Theme for the conference is "Zoos and Aquariums: On the Edge (Nature Knows No Borders is the sub-theme). Suggested topics for presentations may range from animal husbandry in extreme climates and regions to wildlife conservation and research projects of Mexico and the desert southwest of the U.S. To date planned sessions and/or meetings include: International Migratory Bird Day, Birds (a generic theme at this time), Thickbilled parrots, Herps (probably mostly lizards), Reptiles: consequences and effects of lighting on Vit D3 levels, Graphics Education Committee, Teaching Biodiversity: World Wildlife Fund, Mexican wolves (a hands-on session/mini-workshop), Elephants (at least a partial demonstration of an elephant positioning device will take place), AZA's Meso-American Conservation Action Partnership, and Conservation Education Committee (full day meeting).

If you wish to give a presentation and/or moderate a session, contact John Kiseda, Program Chair at (915) 521-1850 with your abstract or your questions. Rules and guidelines will be mailed upon receipt of an abstract or by request.

Mailing address: John Kiseda, Animal Curator, El Paso Zoo, 4001 East Paisano, El Paso, TX 79905; Fax: (915) 521-1857.

Institutions wishing to advertise employment opportunities are asked to send pertinent data by the **10th of each month** to: Opportunity Knocks/AKF, 3601 S.W. 29th St., Suite 133, Topeka, KS 66614. Please include closing date for positions available and when setting these dates keep in mind that because of bulk-mail, most readers do not receive the AKF until the middle of the month or later. There is no charge for this service and fax listings of positions which become available close to deadline are accepted. Our fax is (785) 273-1980. **Please Note NEW ADDRESS for AAZK !**

The following five (5) positions are open at the Fort Worth Zoo, Fort Worth, TX. Please note application criteria/closing date for each position when responding.

AREA SUPERVISOR (Interpretive / Husbandry) ...for the new, 8-acre TEXAS WILD! exhibit at the Fort Worth Zoo - requires Bachelor's degree or equivalent in biology, or related field, and three (3) years of increasingly responsible zoo-keeping experience, including one year of administrative/supervisory responsibility. The successful candidate will have an emphasis on production/presentation of live demonstrations and public wildlife encounters along with a working knowledge of animal husbandry. Will supervise up to ten keepers in a variety of native Texas wildlife exhibit areas, including an aviary, farm exhibit and marine aquaria. Will partner on exhibit management/interpretive presentation with other Texas Wild! Supervisor. Starting annual salary range \$27,000 - \$28,900 plus benefits, commensurate with experience. **Position open until filled.** Send letter and resume to Assistant Human Resources Director, Fort Worth Zoo, 1989 Colonial Parkway, Fort Worth, TX 76110.

AREA SUPERVISOR (Husbandry) ... for the new, 8-acre TEXAS WILD! exhibit at the Fort Worth Zoo - requires Bachelor's degree or equivalent in biology, or related field, and three (3) years of increasingly responsible zoo-keeping experience, including one year of administrative/supervisory responsibility. The successful candidate will have a strong background in exhibit operation and husbandry practices for a wide variety of animal species, along with a working knowledge of live demonstrations and public wildlife encounters. Will supervise up to nine keepers in a variety of native Texas wildlife exhibit areas, including a mixed hoofed-stock and bird exhibit, carnivores, herps and invertebrates. Will partner on exhibit management/interpretive presentation with other Texas Wild! Supervisor. Starting annual salary range \$27,000 - \$28,900 plus benefits, commensurate with experience. **Position open until filled.** Send letter and resume to Assistant Human Resources Director, Fort Worth Zoo, 1989 Colonial Parkway, Fort Worth, TX 76110.

MAMMAL KEEPER/Fort Worth Zoo ... requires high school diploma or equivalent, one (1) year zoo keeping experience with mammals, good communication/organizational skills, and ability to work well with others in a team environment. Responsible for providing animal care, monitoring animal health, maintaining cleanliness of animal areas, and exhibit modification. Starting salary range \$11.01 - \$11.90/hr. plus benefits, commensurate with experience. Send letter and resume **by 1 March, 2000** to City of Fort Worth, Human Resources Department, 1000 Throckmorton Street, Fort Worth, TX 76102.

INTERPRETIVE SPECIALIST... now accepting applications/resumes for the position of Interpretive Specialist. The purpose of this position is to assist in the design and implementation of animal encounter programs for use in the Zoo's Wild Wonders Outreach program. Providing animal care, training, monitoring animal health, training volunteers and performing stage and school presentations are all functions of this position. A college degree in Zoology, Biology, Science Education or other animal related science is desirable. Candidates must possess a flexible personality that can be productive in a team setting and should be able to work in a professional manner with the public. Starting annual salary range \$21,500.00 to \$22,500.00, commensurate with experience. Special requirements include: possession of a valid class "c" drivers license, ability to work irregular hours including weekends and holidays, and have the ability for required lifting.

bending, stooping and walking. Interested applicants may submit a letter of interest, resume and/or application to: Assistant Human Resource Director, Fort Worth Zoo, 1989 Colonial Parkway, Fort Worth, TX 76110 **by 15 March 2000**.

INTERNSHIP AVAILABLE (Nutritional Services Department)...the Fort Worth Zoo is one of only ten zoos in the United States with a Nutritionist. A comprehensive nutrition program includes commissary operations and diet formulation/assessment/research. Interns will learn and participate in commissary operations as well as conduct a nutrition research project. Interns will be introduced to commissary operations including inventory and ordering of feeds and supplies and will learn and participate in diet preparation and deliveries. Interns will also conduct a nutrition research project to assist with evaluating diets for captive exotic animals. Projects range from collecting intake data on collection animals and calculating dry matter intakes using the zoo laboratory to performing a controlled study where the intern is responsible for the care of subjects in addition to data collection. Candidates must be currently enrolled in an undergraduate program in animal science, biology, nutrition, or pre-veterinarian. Computer skills including spreadsheet programs. Salary is \$5.15 per hour, 40 hours/week for 12 weeks. Interested applicants forward letter of interest, resume and faculty member support letter to: HRIS Manager, Fort Worth Zoo, 1989 Colonial Parkway, Fort Worth, TX 76110.

ANIMAL KEEPER GUIDES...several positions available for seasonal employment May through Oct. Requires high school diploma, paid zoo experience preferred, but volunteer experience acceptable. Good opportunity to gain paid zoo experience. Applicants must have strong, audible voices, neat appearance, good personality, and must work well with co-workers as well as the public. Non smokers preferred. Duties include daily animal care and feeding, exhibit cleaning and maintenance, various other maintenance duties, and talking to groups in a tour situation. Must lecture on both venomous and non-venomous reptiles. Must have experience in handling non-venomous reptiles or a willingness to learn. Salary \$195.00 per week. Living quarters, utilities and uniforms furnished. No pets allowed. Send resume to Jim Miller, Soco Gardens Zoo, c/o 89 Evans Cove Rd., Maggi eValley, NC 28751. Filing deadline **25 April 2000**.

The following two (2) positions are available at Utah's Hogle Zoo, Salt Lake City, UT. Please note application criteria/closing date for each position when responding.

PRIMATE KEEPER...requires degree in anthropology, biology, zoology or related field and one (1) year of primate care experience or three (3) years of primate care experience. Responsible for care of the zoo's collection of great apes, including daily husbandry, exhibit maintenance, training, observation and enrichment, as well as assisting in veterinary practices, education, public relations and support aspects of zoo's operation. Salary is commensurate with experience, with an excellent benefit package. Please send cover letter, resumé and references **by 28 February 2000** to: Kimberly Davidson, General Curator, Utah's Hogle Zoo, 2600 Sunnyside Ave., Salt Lake City, UT 84108. EOE.

VETERINARY TECHNICIAN...Vet Tech degree and/or certification preferred, while equivalent experience will be considered. Should have strong working knowledge of veterinary principles, anatomy, pharmacology, parasitology, hematology, radiology, anesthesiology, urinalysis, microbiology, surgical techniques, and animal restraint. Will be directly supervised by the staff veterinarian or the hospital manager. Responsibilities include daily treatment and care of hospitalized and quarantined animals, maintaining hospital equipment and cleanliness of hospital areas, and various logs, clinical rounds including interactions with all husbandry personnel, routine laboratory procedures and overseeing record keeping, including MedARKS. Applicants must be a team player with excellent verbal and written communication and computer skills. Hours, work days and schedules will vary, including weekends and holidays. Competitive salary and benefits. FAX or mail letter and resumé to: Bonnie L. Thomas, Human Resources, Utah's Hogle Zoo, 2600 Sunnyside Ave., Salt Lake City, UT 84108. FAX: (801) 584-1771. **Deadline 28 February 2000**. EOE.

ZOOKEEPER/ELEPHANTS...Roger Williams Park Zoo is seeking a qualified candidate to join our free contact African Elephant Program. We currently house 0.3 African elephants all around the age of 14 years. This position requires strong background in free contact elephant handling; knowledge in the husbandry/propagation of a variety of taxa; good communication skills; ability to observe behavior, present information and produce clear/accurate written reports; ability to define problems/research projects, collect data, establish facts, draw valid conclusions and formulate viable solutions; ability to work effectively in a team-oriented facility. Bachelor's degree in zoology/biology/animal science/related field or equivalent professional experience preferred. Send resumé/letter to: Amos Morris, Curator of Africa, Asia and North America, Roger Williams Park Zoo, 1000 Elmwood Ave., Providence, RI 02907 nor e-mail >Amorris@RWPZoo.org<

ASSISTANT ZOO DIRECTOR...Columbian Park Zoo, Lafayette, IN. Requires high school diploma or equivalent. Bachelors degree in biology, zoology or related field or equivalent combination of education, training and work experience. Minimum three (3) years zoo experience, one (1) year administration/supervision, and certification in First Aid and CPR. Knowledge of principles and practices of zoo management. Effective communication skills including public speaking skills. Ability to prepare and administer budget. Valid driver's license. Duties will include serving as Assistant Zoo Director for the Parks and Recreation Dept. Position is responsible for animal collection, exhibit/grounds maintenance, and supervision of zoo staff. Incumbent is an advocate for our zoo in the community and assists in marketing/education/guest services programs. Hours are M-F 8:00 a.m. - 5:00 p.m. (flexible hours may include evenings and weekends). Salary range \$25,000.00 to \$27,300.00 (2000 salary range). To apply send letter and resumé to: Kathy Wade, Director of Human Resources, 20 N. 6th St., Lafayette, IN 47901; or contact her at (765) 476-4469; or e-mail to >kwade@city.lafayette.in.us< or fax to (765) 476-4518.

AQUARIUM SUPERVISOR...The Mirage Hotel is Las Vegas, NV is seeking candidates for the position of Aquarium Supervisor. Responsibilities include overall care and maintenance of 20,000 gallon artificial reef aquarium and associated hotel aquariums and quarantine facilities. Strong background in water chemistry, disease diagnosis/treatment, lab procedures, and closed water filtration systems required. Candidate should possess excellent team leader skills and ability to serve as a resource for aquarium staff in developing job skills. Requires BA/BS in biology or related field and/or minimum of six (6) years aquarium experience. Please send resumé to: Julie Wignall, Director, Dept. of Animal Care, The Mirage, 3400 Las Vegas Blvd. South, Las Vegas, NV 89109 or FAX to (702) 792-7684.

VETERINARY TECHNICIAN...the International Crane Foundation invites applications for the Vet Tech position. Responsibilities include providing medical care for the captive flock of 120 cranes in coordination with the veterinarian, and assisting with general care of the flock for 20% of total work time. Candidates must have a veterinary technician degree and certificate and at least two (2) years experience in zoo, wildlife, or avian flock care, and be competent in anesthesia/monitoring, radiology, animal restraint, laboratory procedures (experience in avian hematology beneficial), MedARKS data entry, and inventory management. Competitive salary commensurate with experience. Applicants should submit a letter of intent, curriculum vitae and the names of three (3) references to: Peter Murray, International Crane Foundation, E-11376 Shady Lane Rd., Box 447, Baraboo, WI 53913-0447; Fax to (608) 356-9465; or e-mail to >pmurray@savingcranes.org< **Applicant review will continue until the position is filled.** ICF is an EOE.

ZOOKEEPER...performs tasks associated with the husbandry and maintenance of native and exotic animals in an education- and conservation-oriented zoological park. Responsibilities include daily reporting, assisting with veterinary care and exhibit maintenance. Must be able to work effectively with the public in a team-oriented workplace. Requires high school diploma or GED; supplemented by one (1) year previous experience with captive wild animals in a zoological facility; or any equivalent combination

of education, training, and experience which provides the requisite knowledge, skills and abilities for this job. Must possess a valid Georgia driver's license or be able to obtain after employment. Salary from \$16,180 DOQ along with excellent benefits package. Chehaw Wild Animal Park is a 100-acre AZA-accredited facility with the 900-acre multi-use Parks at Chehaw governed by the Chehaw Park Authority. For application call (912) 431-2806 and Fax resumé to Human Resources Department, City of Albany, GA at (912) 434-2697.

ANIMAL AMBASSADOR ...Animal Ambassador Outreach Program seeks resumés. Must have professional appearance and outstanding "people skills". Ability to work both independently and as a team player. Must have a valid driver's license, clean driving record, be able to lift 50 lbs., and have a sense of humor. Responsibilities include daily care and handling of a diverse group of amazing animal ambassadors; public speaking and program presentation. Starting salary \$18,000.00 to \$19,000.00., medical benefits and paid vacation. **Available until position(s) filled.** Direct inquiries and resumés to: Animal Edutainment, 7151 Cedar Lake Rd., Aubrey, TX 76227; phone (940) 365-9741' Fax (940) 440-3564; e-mail >critterman@animaled.com<

The following two (2) positions are available at Flag Acres Zoo, Inc., Hoosick Falls, NY. Please note application criteria/closing date for each position when responding.

ZOO KEEPER(*Summer Internship Position*)...Flag Acres Zoo, May 1 to Sept. 15. Responsibilities to include assisting in all aspects of caring for over 50 species of wildlife (including endangered species); giving lectures and tours on and off site. Seeking self-starters, high energy individual with effective communication skills and preference given to those with experience working with animals. Send resumé and cover letter to: Flag Acres Zoo, 2 Rowley Rd., Hoosick Falls, NY 12090 or telephone (518) 686-3159; Fax (518) 686-1675; e-mail >FAZOOLYNNE@aol.com<

KEEPER ASSISTANT (*Seasonal Position*)...animal caretaker position, May 1 to September 20. Responsibilities include assisting in all aspects of caring for over 50 species of wildlife (including endangered species). Seeking self-starter, high energy individual with effective communication skills and preference given to those with animal experience. Send resumé and cover letter to: Flag Acres, 2 Rowley Rd., Hoosick Falls, NY 12090 or telephone (518) 686-3159.

ZOOKEEPER II/Birds..requires at least two (2) years experience as a zookeeper, preferably with an AZA-accredited institution; basic knowledge of behavioral conditioning; high school diploma; good public speaking skills and desire to share with the public; good physical condition and ability to lift 50 lbs.; good leadership skills and the ability to work well with others in a team setting. Wage: \$10.00/hour and excellent benefit package. Send resumé to: Nancy Hollenbeck, Assistant Director, Santa Barbara Zoological Gardens, 500 Ninos Dr., Santa Barbara, CA 93103.

The following Intern Positions are available at the Denver Zoo. Applicants may mail or Fax a resumé to: Public and Animal Programs, Denver Zoo, 2300 Steele St., Denver, CO 80205-4899; Fax (303) 376-4839; e-mail >edanimals@denverzoo.org< Deadline is 29 February 2000.

WILD ENCOUNTERS/KRAAL INTERNS...these positions offer variety to those looking for an animal care position linked with public work. Interns will be responsible for entertaining and educating zoo guests during the Denver Zoo Wild Encounters as well as operating the Kraal, a small version of an African farm yard complete with domestics. Duties of the intern include: presenting several interactive programs using live animals and animal artifacts (biofacts) daily; primary care of the African farm animals in the Kraal; interpreting the Kraal animals and exhibit to the public; assisting in additional animal care within the Education Dept. These duties, and more, will demand energetic

and flexible people who wish to share their enthusiasm for animals with the public. Since these interns will work with various staff and volunteers, an upbeat, team-playing personality is essential. Three to four (3-4) positions are available during the spring/summer season beginning in April 2000. Applicants should have experience with animals; public speaking and experience educating children necessary. Interns pursuing biology, zoology or related degree receive priority. Pay rate is \$8.00 per hour.

WILDLIFE SHOW INTERNS...seasonally, the Education Dept. will inspire and delight all ages with a variety of free-flighted birds in the Conoco Wildlife Theater. The primary duty of these interns will be animal husbandry, however, they will have the opportunity to perform shows on stage and assist in animal training. Three (3) positions are available during the summer season beginning in late March 2000. Applicants should have experience with animals, especially birds of prey or parrots; animal training background preferred; public speaking and experience educating children necessary. Interns pursuing biology, zoology or related degrees given priority. Pay rate is \$8.00 per hour.

ANIMAL KEEPER...the Grizzly Discovery Center, a not-for-profit educational facility in West Yellowstone, MT, is looking for a full-time permanent keeper interested in working with captive brown bears and gray wolves. Responsibilities include care and monitoring of collection, maintenance of exhibits, on-grounds interpretation and educational outreach. B.S. in wildlife biology, zoology, biology preferred as well as at least one (1) year of bear-wolf husbandry experience. Starting salary \$17,500.00 plus benefits. Located at the west entrance of Yellowstone National Park, the Center's mission is to educate visitors about the native wildlife and ecosystem. Send letter, resumé and telephone numbers of three (3) references by **7 March 2000** to: John Heine, Grizzly Discovery Center, P. O. Box 996, West Yellowstone, MT 59758. Resumés may be faxed to (406) 646-7004.

KEEPER (union position)...this position requires a broad knowledge and experience with husbandry and propagation techniques for a diverse group of bird species. Responsibilities include all aspects of daily animal care. Avicultural experience, a Life Science degree or equivalent specialized training is preferred. Skills needed to perform job include maintenance of exhibit/facilities, data collection, record keeping and exhibit fabrication. Public speaking skills are desirable for educational presentations. Applicants must be available any of the seven days of the week with the possibility of a late shift. This is a short-term position to last eight (8) months. Regular with benefits. Hourly pay rate will be \$14.60 effective 2/22/00. Submit resumé to the San Diego Zoo/Human Resources Office, Otto Center, (ATTN:BIRDS#162001), P.O. Box 120551, San Diego, CA 92112-0511. **Deadline is 25 February 2000.**

The following three (3) positions are available at the Kansas City Zoo, Kansas City, MO. Applicants will be evaluated only on information submitted by application deadline. All positions require successful completion of drug screen/physical as condition of employment. Non-residents, if appointed, must establish residency within Kansas City, MO within nine months. EOE. For any of the following positions send resumés to: City Hall, Human Resources, 12th floor, 414 E. 12th St., Kansas City, MO 64106 by 25 February 2000.

ANIMAL AREA SUPERVISOR/Elephants...seeking a progressive, team-oriented elephant area supervisor. Responsibilities will include managing a breeding program for 2.6 African elephants and supervising six employees. the candidate must possess a strong background in captive elephant management in a protected contact setting. Strong leadership and communication skills necessary. Minimum requirements: high school/GED and an accredited associate degree in biology or related field plus a minimum of two (2) years experience in captive elephant management. Salary range: \$2,100.00 to \$3,250.00/month.

ZOO KEEPER (Two positions available)...requires high school/GED and a minimum of one (1)-year's experience working with captive exotic animals. Prefer diverse experience

including work with great apes and/or elephants. The successful candidate will have a strong background in exhibit operations and husbandry practices. Knowledge of behavioral modification and varied enrichment techniques desirable. Salary range: \$1,811.00 to \$2,812.00.

ZOO KEEPER. Immediate Opening. Private, non-profit otter conservation facility for breeding and study programs, seeking dedicated individual for permanent position. Requires one (1) year experience with exotic animals - experience with mustelids preferred. Responsible for daily husbandry, maintenance of animals and grounds enclosures, diet preparation, and record keeping. Experience with animal restraint and blood drawing preferred. Must be physically strong (able to lift 50 lbs.) and work independently. 40-hour work week including some weekends and holidays. Benefits included. Send letter and resumé to: Otter Conservation Center, Inc., 250 Otter Conservation Rd., Statesboro, GA 30458. Resumés may be faxed to (912) 839-2551.

ANIMAL CARE INTERNS... Summer 2000. Four intern positions available within Fossil Rim's animal care department: Animal Care Intern, Children's Zoo Intern, Rhino Intern, and Avian Intern. Candidates should be in an undergraduate or graduate program related to wildlife management, conservation biology or a related science degree. Interns are responsible for the daily cleaning, feeding, health monitoring, observation, and sample collection of a number of exotic and domestic species including red, Mexican and maned wolves, various hoofstock, goats, sheep, tortoises, macaws, ocelots, Attwater's prairie chickens and black rhinos. Stipend may be available plus housing for a four-month position May through August. **Application deadline is 1 March 2000.** Send resumé to: Linda Gustafson, Fossil Rim Wildlife Center, 2155 County Road 288, PO Box 2189, Glen Rose, TX 76043-6107 or Fax (254) 897-3785. For more information call (254) 897-2960, ext. 305 or e-mail: animal care@fossilrim.com

AVICULTURE INTERN... will receive intensive, hands-on training in the care and maintenance of a large bird collection. Will experience all aspects of bird husbandry including general cleaning, handling, incubation, record keeping, public education, etc. Seeking college students or recent graduates with an interest in avian management biology. Interns will work with the aviculturists for a three-month period. This is a volunteer position with on-site housing provided. Internships available year-round. Send a letter and resumé with references to: Tracy Aviary, 589 East 1300 South, Salt Lake City, UT 84105. ATTN: Kristine McCue/Holly Seitz.

INTERNSHIP... The Audubon Institute is offering a hands-on internship at the Species Survival Center. Interns will receive training in the care of endangered species such as antelope, birds and cats. Interns will participate in all aspects of animal maintenance and care; including the incubation and rearing of chicks, exhibit maintenance, animal enrichment program and general cleaning. Special opportunities exist to participate occasionally in laboratory and veterinary procedures. Seeking college students or graduates for a minimum of 10 weeks time. This is a voluntary internship position. Some on-site housing is available. Internships are given year-round. Transportation is necessary. For an application and more information, please contact Jackie Conlon, Audubon Center for Research of Endangered Species, 14001 River Road, New Orleans, LA 70131; phone (504) 398-3166; Fax (504) 398-3100; e-mail: lab@acres.org<

*Check AZA Member Institution job position listings
on the AZA Home Page: <http://www.aza.org>*

AAZK Membership Application

check here if renewal []

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Canada regardless of category*

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an animal facility*

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Please charge my credit card

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Name on card _____ Expiration date _____

Signature _____

Mail this application to: AAZK Administrative Offices, 3601 S.W. 29th, Suite 133 Topeka, KS 66614. Make checks/money orders payable to AAZK, Inc. Must be in U.S. FUNDS ONLY. Membership includes a subscription to *Animal Keepers' Forum*. The membership card is good for free admission to many zoos and aquariums in the U.S. and Canada.



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ANIMAL KEEPERS' FORUM



**The Journal of the American
Association of Zoo Keepers, Inc.**
March 2000

Managing Editor: Susan D. Chan • **Associate Editors/Enrichment Options**

Coordinators: Gretchen Ziegler, Sequoia Park Zoo & Jan Roletto, Utah's Hogle Zoo • **Legislative Outlook**

Column Coordinator: Georgann B. Johnston, Sacramento, CA • **ABC's Column Coordinator:** Diana Guerrero, San Diego, CA • **Reactions Column Coordinator:** William K. Baker, Jr., Frank Buck Zoo, Gainesville, TX

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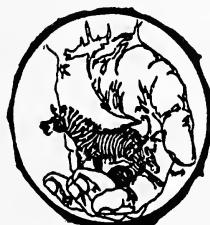
Biological Values for Selected Mammals, 3rd Edition - Jan Reed-Smith, John Ball Zoo



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About the Cover.....

*This month's cover features "Chris", a male African lion (*Panthera leo*) drawn by Dean Simonson, a Keeper at Lion Country Safri in West Palm Beach, FL. This male lives in a seven-member bachelor pride (their female companions are now at ACRES, Audubon Zoo). At well over 180 kg (~400 lbs.), Chris is quite adept at climbing - trees, that is. He has a particular favorite - a 15-foot palm that he can frequently be seen in, peering out through the fronds. In addition, there is a younger pride of 1.7 cats that are rotated into the two-acre drive-thru exhibit on alternating days. Lions are the most social of all the big cat species, living in groups of up to 30 animals made up principally of lionesses and their cubs with perhaps one or two males which provide security for the group and breed the females. With a favorable wind, a lion's roar can be heard for up to five miles. Thanks, Dean!*

Animal Keepers' Forum publishes original papers and news items of interest to the animal keeping profession. Non-members are welcome to submit articles for consideration. Articles should be typed or hand-printed and double-spaced. Authors are encouraged to submit their manuscripts on a disk as well as in hard copy form. Acceptable formats include: for Macintosh users - Microsoft Word or Works; IBM users - Word for Windows, WordPerfect or Wordstar. All illustrations, graphs, charts and tables should be clearly marked, in final form and should fit in a page size **no greater than 5.5" x 8.5" (14cm x 22cm)**. Literature used should be cited in the text (Brown, 1986) and alphabetically in the final bibliography. Avoid footnotes. Include scientific name (as per ISIS) the first time an animal name is used. Thereafter use common name. Use metric system for weights and measurements (standard equivalents may be noted in parenthesis). Use the continental dating system (day-month-year). Times should be listed as per the 24-hour clock (0800, 1630 hrs. etc.). Glossy black and white **or** color prints (minimum size 3" x 5" [8cm x 14cm]) are accepted. Clearly marked captions should accompany photos. Please list photo credit on back of photo.

Articles sent to *Animal Keepers' Forum* will be reviewed by the editorial staff for publication. Articles of a research or technical nature will be submitted to one or more of the zoo professionals who serve as referees for *AKF*. No commitment is made to the author, but an effort will be made to publish articles as soon as possible. Lengthy articles may be separated into monthly installments at the discretion of the editor. The editor reserves the right to edit material without consultation unless approval is requested in writing by the author. Materials submitted will not be returned unless accompanied by a stamped, self-addressed, appropriately-sized envelope. Telephone and FAX contributions of late-breaking news or last-minute insertions are accepted as space allows. However, long articles must be sent by U.S. mail. Phone 1-800-242-4519 (US); 1-800-468-1966 (Canada); FAX (785) 273-1980.

**Deadline for each regular issue is the 10th of the preceding month.
Dedicated issues may have separate deadline dates
and will be noted by the editor.**

Articles printed do not necessarily reflect the opinions of the *AKF* staff or the American Association of Zoo Keepers, Inc. Publication does not indicate endorsement by the Association.

Items in this publication may be reprinted providing credit to this publication is given and a copy of the reprinted material is forwarded to the editor. Reprints of material appearing in this journal may be ordered from the editor. Back issues are available for \$3.00 each.

Scoops & Scuttlebutt



Chapters Continue Support for AAZK, Inc.

The AAZK Board of Directors and the Administrative Office staff would like to thank the following AAZK Chapters for their recent donations in support of the Association and its programs and projects: The Chesapeake AAZK Chapter (Salisbury, MD) \$1800.00 designated for the newly created AAZK Endowment Fund; Point Defiance AAZK Chapter (Tacoma, WA) \$2024.00 to be evenly divided between the AAZK general operating expense budget and the Conservation, Preservation and Restoration Grant Fund; Northern Lights Chapter (Duluth, MN) \$289.00 [general operating fund]; Greater Baltimore Chapter AAZK (Baltimore, MD) \$200.00 [general operating fund]; Lincoln Park AAZK Chapter (Chicago, IL) \$100.00 [general operating fund]; AAZK Sacramento Chapter (Sacramento, CA) \$100.00 [AAZK Endowment Fund]; Burnet Park Zoo AAZK Chapter (Syracuse, NY) \$100.00 [general operating fund]; AAZK of Cheyenne Mountain Zoo (Colorado Springs, CO) \$50.00 [Conservation, Preservation and Restoration Grant Fund]. We gratefully acknowledge the generous support of these Chapters in helping the Association carry out its mission.

AAZK Announces Availability of Two Different Granting Programs

The American Association of Zoo Keepers announces the availability of two granting opportunities:

The Conservation, Preservation and Restoration Grant - This \$1000.00 grant is designed to encourage and support efforts in conservation conducted by keepers and aquarists in zoological parks and aquariums around the world. Members of AAZK in good standing are eligible to apply and receive this grant. The member **MUST** have an active role in the conservation effort submitted for consideration.

The Zoo Keeper Grants in Research - Two \$750.00 grants are funded to encourage and support noninvasive research conducted by keepers in zoo and aquarium settings. The principal investigator **MUST** be a full-time keeper and a member in good standing of AAZK, Inc.

Deadline for application submission for either grant option is **31 May 2000**. Successful grant recipients will be announced at the AAZK National Conference in Columbus, OH. The grant cycle runs from 1 January 2000 to 31 December 2000.

For further information or application packet contact: Jan Reed-Smith, AAZK Grants Committee Chair, John Ball Zoo, 1300 W. Fulton Ave., Grand Rapids, MI 49504; e-mail: jrsotter@iserv.net; Fax - (616) 336-3709. Be certain to specify whether you are requesting information on CPR or Research Grants.

Wildlife Preservation Trust Announces Schools

The International Training Centre (ITC) of the Wildlife Preservation Trusts is based in Jersey, Channel Islands. Here at the Headquarters of the Durrell Wildlife Conservation Trust the ITC offers a unique opportunity for training in Conservation and Zoo Biology. The ITC runs a three-week Summer School intended as an intensive introduction to principles of Conservation Biology with an emphasis on the role that Zoological parks and similar institutions can play in the process. Group research projects are incorporated in this course but there is no hands on animal work. 17th July to 4th August 2000 cost £1,145 including Bed and Board. A longer residential

course is also offered running from between 12 to 16 weeks. With more time this longer course offers an opportunity for practical work within the Jersey Zoo and a more extensive research project in addition to a more comprehensive treatment of zoo and conservation biology in the theory sessions. For further information on these courses please contact us ITC, Durrell Wildlife Conservation Trust, Les Augres Manor, Trinity, Jersey JE3 5BP Phone: +44 (0)1534 860037 Fax +44 (0)1534 860002 e-mail itc@durrell.org<

International Elephant Foundation Solicits Abstracts

The International Elephant Foundation is looking for papers and posters on research and conservation issues relevant to captive and wild elephant management. Please send all abstracts to Deborah Olson, Program Officer, International Elephant Foundation, P.O. Box 366, Azle, TX 76098. Fax: 817-444-5101; email: dolson@indyzoo.com< **Deadline for submission is 15 April 2000.**

AAZK Websites: Check 'em Out

We hope you have all had an opportunity to check out the new AAZK website which contains all kinds of information about the Association's projects, committees, publications available, plus links to other interesting sites. You access the AAZK website at www.aazk.org< There is also a bulletin board, which at the present time is closed to the general public but accessible to AAZK members. To post a question to the bulletin board, simply type in "aazk" (lower case letters) in the member name box, and "Elvis" in the password box.

If you want information on **Bowling for Rhinos** or need to download BFR artwork to use in your event promotions, you may access that website at www.bfr.aazk.org

For your enrichment buffs, be sure to check out the AAZK Enrichment website at www.enrich.org/aazk<

You might like to check out two website addresses which came across this editor's desk this month. They are: Predator Conservation Alliance at www.predatorconservation.org< and the Tiger Creek Wildlife Refuge at www.tigerlink.org<

Found on ZooNews from Peter Dickinson out of Scotland were these websites worth a look: Zoo Design <http://www.zoolex.org>< and The Sloth Web Site <http://www.geocities.com/Hollywood/Set/1478/sloth.html><

Happy surfing!

ADTForm Available for Animal Shipments

Animal Data Transfer Forms (ADTForms) for use whenever an animal is shipped to a new institution are available free as a professional courtesy from AAZK, Inc. These forms help provide vital information on an animal's medical, dietary and reproductive history to the receiving institution's staff and veterinarian. We hope you will encourage the use of ADTForms at your facility whenever an animal is shipped. To order a supply, contact AAZK Administrative Office, 3601 S.W. 29th St., Suite 133, Topeka, SKS 66614 or call 1-800-242-4519 (U.S.) or 1-800-468-1966 (Canada); or fax your order to (785) 273-1980.

Coming Events

ARAZPA/ASZK Conference 2000 - March 20-24, 2000 in Gold Coast, Australia. Hosted by Sea World. For further information contact: Aileen Forrester, ARAZP/ASZK Conference Organizer, Sea World, P. O. Box 190, Surfers Paradise, Qld, 4217, Australia.



7th Western Black Bear Workshop - May 2-4, 2000 in Coos Bay, OR. Hosted by the Oregon Department of Fish and Wildlife. Registration and program information available from: Dave Immell, Oregon Dept. of Fish & Wildlife, 4192 N. Umpqua Hwy., Roseburg, OR 97470; phone (541) 440-3353; Fax (541) 673-0371; e-mail: dave.a.immell@state.or.us

"Genetic Resources for the New Century" - May 8-12, 2000 Hosted by Zoological Society of San Diego. For more information, contact conference organizers, Oliver Ryder, Ph.D., e-mail: oryder@ucsd.edu or Kurt Benirschke, M.D., e-mail: kbenirsc@ucsd.edu

The Apes: Challenges for the 21st Century - May 10-14, 2000 in Chicago, IL. Hosted by The Chicago Zoological Society (Brookfield Zoo). A unique conference focusing on the apes of the world. It is hoped to bring together researchers, zoo personnel and field biologists from all over the world. Conference will include several days of presentations, an icebreaker, round table discussions and a day at the Brookfield Zoo including a silent auction, raffle and a banquet. Immediately following the conference, Lincoln Park Zoo will host the North American Ape Taxon Advisory Group meetings. For information on registration/submission of abstracts contact: Brookfield Zoo Ape Conference Planning Committee at (708) 485-0263 ext. 604; Fax (708) 485-3140, or you may e-mail at: APECON@BROOKFIELDZOO.org

Fifth International Elephant Research Symposium (June 2-3) and the Second North American Conference on Elephant Foot Care and Pathology (June 4) Hosted by Oregon Zoo For further information contact: Norie Dimeo-Ediger at (503) 220-5763, by fax at (503) 226-0074, or by e-mail : edigern@metro.dst.or.us<

Animal Behavior Society Annual Meeting August 5-9, 2000 in Atlanta, GA, co-hosted by Morehouse College and Zoo Atlanta. Along with contributed talks and posters, the meetings will include special symposia on "Dispersal Behavior" and invited papers on "Comparison Between Primates and Cetaceans". Plenary speakers include Chris Boake, Hugh Drummond and Dee

Boersma. For further info see: <http://www.animalbehavior.org/ABS/Program/>

Animal Trainers Network Workshop - June 11-13, 2000, Cincinnati Zoo. Early registration will be provided for those arriving on the evening of June 10. There will be detailed future announcements upcoming in AKF. Interested parties, please contact Dawn Strasser, Cincinnati Zoo at (513) 281-4700 ext. 7710; Jane Anne Franklin, Louisville Zoo at (502) 459-2181; or Adriion & Valerie Haft, Cincinnati Zoo at (513) 281-4700 ext. 8356.

15th International Zoo Educators Conference

1 - 6 October 2000 in Guadalajara, Mexico. For more information contact Maria Eugenia Martinez Arizmendi, head of the Education Department. Telephone : 0052-3-6744104; Fax: 0052-3-674-4488; E-mail: 104164.3717@compuserve.com

Carnivores 2000: A Conference on Predator Biology and Conservation in the 21st Century - November 12-15, 2000. Hosted by the Defenders of Wildlife at the Omni Interlocken Hotel in Denver, CO. For more information contact: Carnivores 2000, Defenders of Wildlife, 1101 14th St., NW, Washington, DC 20005 or call (202) 789-2844 ext. 315 or e-mail: nfascione@defenders.org<

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AAZK Safari to Kenya

Last month we announced the AAZK trip to Kenya. This month we'd like to tell you a little about it.

The trip has been designed for those with a sense of adventure. Ever been to Africa? Want to go to Africa but don't want to go on your own; join AAZK and discover Kenya for the first time with a group of people with your own interests - animals.

The Taita Discovery Center, located on the Taita-Rukinga Conservancy, adjacent to Tsavo National Park and the Masai Mara Game Reserve are the destinations; the group - at least in part - can design the exact nature of the trip. How, you ask?

The Taita Discovery Center is an education center designed to simulate an African village with round thatched buildings surrounded by a thick boma of thorn trees. This will be home for five days, long enough to gain a familiarity with the beauty of the surrounding country, wildlife and people. No rushing here and there, pushing to fit in a different park every day all in the name of "seeing Africa". Instead, trip participants can select, in advance, what projects the group would like to participate in.

These include:

- a. Working on a community service project. Maintaining the balance between wildlife needs and the needs of the human population is fundamental to the long-range goals of every successful conservation effort. In order to establish a genuine cross cultural interaction between Taita residents and Kenyans, community service projects are designed to provide interaction on a one-on-one basis. Cooperative work projects may involve digging ditches for water pipelines, constructing a fish pond, road maintenance, planting trees, whatever is going on at the time. Sounds like going on vacation to work, but keepers are one group not afraid of work and we are all familiar with the camaraderie of heavy labor; could be a nice way to make new friends.
- b. Compare the ecology of Tsavo National Park, Taita/Rukinga Conservancy, and the public areas that surround them both. What has the impact of fire, grazing of domestic animals and wildlife been on the soils and vegetation? How have the permanent, artificial water sources influenced the surrounding ecological balance? Obviously, the group can't go into great detail but an interesting way to look a little deeper into the problems facing Africa.

c. Survival skills any one? Taita is set up to introduce groups to the fine arts of wilderness survival, Africa style. The group can practice map and compass reading then participate in an in-depth study of the art of game tracking as used by the Taita Conservancy's anti-poaching unit and learn about some of the traditional hunter/gatherers ancient methods of surviving in their harsh environment. After training, small groups will head out with the objective of finding a camp site that has been set up for them. The reward is a night in a temporary "fly" camp.

d. Elephant and lion monitoring are ongoing tasks. Approximately 1000 elephants migrate through the Taita Hills and into Tsavo National Park; on their way they drink valuable water and destroy crops. Taita Ranch loses over 400 head of cattle annually to lion. What can be done; what should be done? Why should the local community conserve these animals when all they do is eat their food and drink their water? If the group chooses to participate in a day of elephant and lion monitoring expect to look more closely at these questions.

e. Africa's people have long been recognized for their skills of basket weaving, pottery making, beadwork, and ability to carve wood and stone into utilitarian and art objects. The group can decide to spend a day learning something of these crafts with the help of local African craftsmen.

From Taita the group will travel to the Masai Mara and stay along the river in the Mara River camp. Spend your remaining evenings listening to hippos in the river and, if you're lucky, stories of Kenyan politics or a local song fest at the bar by the river.

So, if you have ever thought of going to Africa, maybe now is the time. Go for it!

(You may contact AAZK Administrative Office for a brochure which offers more details and pricing information on this trip. CALL 1-800-242-4519 (U.S.) OR 1-800-468-1966 (Canada).



AAZK Award Nominations Are Now Being Accepted for 2000!

The AAZK Awards Committee is accepting nominations for the Certificate of Merit for Zoo Keeper Education and Certificate of Excellence in Exhibit Renovation (CEER) to be presented at the 2000 AAZK Conference in Columbus, OH. The deadline for all award nominations is **1 June 2000**. Information concerning the qualifications, nomination procedure, selection procedure and an explanation of the awards may be obtained by contacting Janet McCoy, Awards Chair, AAZK Awards Committee, Oregon Zoo, 4001 S.W. Canyon Rd., Portland, OR 97221.

Certificate of Merit for Zoo Keeper Education (CMZE)

The purpose of the award is to recognize individuals, institutions and organizations in the zoological community most actively promoting educational programs for zookeepers. Examples of such support are: reimbursements for formal education, keeper training courses and staff seminars. The CMZE was founded by Jeff Roberts, 1976-1978 CHAIR, in 1978, to compliment the work of the AAZK Education Committee that had been formed at that time.

Qualifications:

1. Any staff individual, institution or organization from a North American zoo, aquarium or related facility is eligible.
2. The keeper training program must have been in existence for at least one year.

Nomination Procedure:

1. If you feel that your institution, organization or a staff individual merits such an award, please submit a letter of nomination which mentions specifically the educational programs that are offered.
2. Claims made should be backed up with documentation for the committee to review.
3. List the institution or organization's name, address, phone and Director.
4. The deadline for nominations is JUNE 1st of each year.

Selection Procedure: The Awards Committee, consisting of five keepers, will independently review each nominee.

Certificate of Excellence in Exhibit Renovation (CEER)

The purpose of the award is to recognize institutions or organizations in the zoological community for the design and renovation of existing animal facilities which involved active keeper participation in the process. The CEER was established by Janet McCoy, 1990 CHAIR. Bill Whittaker proposed the award to the AAZK Board of Directors.

Qualifications:

1. Any North American zoological institution or organization is eligible.
2. The renovated exhibit must be in full operation for at least two years.
3. The exhibit must be nominated by a keeper at that same institution or organization. Supporting nominations may be submitted by management personnel from the same institution.

Nomination Procedure:

1. List institution or organization's name, address, phone and Director.
2. **Document** local awards or commendations for exhibit, drawings, 8 X 10 color photos - no slides (2 before and 8 after), and renovated exhibit type: single or multispecies, and size.
3. **Document** keeper participation in the design and why the existing facility was renovated.
4. **Document** interface with other zoo divisions; and maintenance of exhibit after completion.
5. The deadline for nominations is **JUNE 1st** of each year.

Selection Procedure: The Awards Committee, consisting of five keepers, will independently review each nominee.

Nominee Evaluation: The evaluation of each nomination is broken down into four categories based on the general guidelines outlined for the award. The four categories are: Keeper Involvement, Exhibit Functionality, Exhibit Management and Visitor Point of View/ Other Information. Items the committee is looking for are the following:

A. KEEPER INVOLVEMENT:

- a) degree of keeper involvement with conceptual development of exhibit
- b) degree of keeper involvement with facilitation of completion of exhibit, (fund raising, promotion, assist with construction)
- c) contribution to educational experience (graphics, conservation message)
- d) originality - is it something new and different, or has it been tried before

B. EXHIBIT FUNCTIONALITY:

- a) versatility - indoor/outdoor, four seasons, protection from elements
- b) accommodates and encourages animal's natural behavior - climbing structures, land area, height, water
- c) hard (gunite, concrete) vs soft (grass, dirt) environments - as to animal needs
- d) sight lines valuable to animal as well as visitor - important to some animals (polar bear, chimps)
- e) physical and visual barriers for animal's use, animal safety
- f) flexible entrance/exits (hoofstock - more than one entrance)
- g) ability to exhibit natural social grouping
- h) breeding success

C. EXHIBIT MANAGEMENT:

- a) how management of exhibit interfaces with other zoo divisions (grounds, maintenance - simple repair, paint)
- b) keeper serviceability, overall maintenance of exhibit and surroundings
- c) adequate drains and properly located
- d) quality and versatility of holding areas - ease of separating animals, moving, breeding, sick
- e) keeper sight lines - can you see animal when they come into holding or when shifting them between areas, keeper safety
- f) ease of providing time change items (browse, logs, feed, novel objects)
- g) environmental control (ease of seasonal adjustments - ventilation, heat)

D. VISITOR POINT OF VIEW/OTHER INFORMATION:

- a) educational experience (conservation message)
- b) immediate and sustained viewer interest
- c) sight lines - not see doors, drains, fencing - does it have esthetics
- d) bonus point - local awards, commendation, "wow" factor
- e) include anything else pertinent to the renovated exhibit that you think is important

The American Association of Zoo Keeper, Inc. (AAZK) is the administering organization for the Jean M. Hromadka Excellence in Zookeeping Award, the AAZK Lifetime Achievement Award, and the Meritorious Achievement Award presented by the AAZK Awards Committee from nominations by the membership. The character of these awards includes a plaque, letter of notification to the institution's director and national recognition by professional journals. Such journals include: The American Zoo and Aquarium Association's *Communiqué*, the Canadian Association of Zoological Parks and Aquariums (CAZPA) newsletter, *Animal Keepers' Forum* (AAZK), Awards, Honors and Prizes: United States and Canada. The latter is published by Gale Research Company based in Wheaton, MD and is found in medium to large sized libraries across the U.S. and Canada.

Award nominations should be submitted to:

Janet McCoy, Awards Chair

The Oregon Zoo, 4001 S.W. Canyon Rd., Portland, OR 97221.

Award Nomination Submission Deadline is 1 June 2000



REACTIONS

A Question and Answer Forum for the Zoo Professional on Crisis Management

*By William K. Baker, Jr., Zoo Curator
Frank Buck Zoo, Gainesville, TX*

Question

What level of impact do emotions have in the zoo environment?

Comments

I'll be the first to admit that this is definitely one of the more intriguing questions that has been put to me. On the surface it may be questionable just what impact, if any, does this have on crisis management? Still, after some introspective thought it occurred to me that as emotional beings there is bound to be an impact when professional and personal aspects interact or come into conflict. I take it as a given that if emotions are running high that a person is probably not focused and thus lends itself to an accident waiting to happen in the work environment. Also, when a crisis occurs, emotions are certainly running the full length of the spectrum. Within the zoo work environment there are an infinite number of stressors that can impact the psychodynamics in any given situation.

I first started out as a wildlife biologist before I entered the zoological profession. Everything made perfect sense. In my experience, wildlife and field biologists think alike. A common mindset exists. The possibility of conflict exists, but is rarely realized. Needless to say, this went straight out the window when I entered the zoological profession. I'll never forget how amazed I was at the diversity of varying viewpoints and attitudes within the profession. After some time, I came to the conclusion that it makes life interesting, different, and often annoying.

I would be lying to myself if I didn't admit up front that while our profession is one of the most rewarding and satisfying things a person could do for a living, it is also one of the most high stress environments in existence. The stressors are there and how we deal with it in our daily lives is in part what defines us.

The best way to illustrate this point is to draw from personal experience. As a zoo keeper I have watched other keepers live from day to day in intolerable work environments under managers with little if any real animal experience and, conversely, animal managers with no management capabilities. The end result is keepers who feel trapped in a disintegrating work environment. Morale is non-existent and the staff is polarized into a "us vs. them" mentality. I have even seen staff members who wouldn't move to another facility out of fear for the animals' care in their absence. Their dedication to their animal charges is so strong that they would stay and fight for years if necessary.

Eventually, management turns over and the pendulum swings the other direction. However, this often takes years. During this period of time many keepers move on to

other facilities. One of my peers refers to this as the "Holy Grail Syndrome". Essentially, you jump from facility to facility looking for the perfect place to work. However, after a few months, the newness wears off, reality sets in, and the hunt is on again. Personally, I have never seen a perfect institution. I have seen a handful of truly dedicated and professional facilities in my career. Their staff turnover is virtually zero and for good reason. Why would you want to leave?

Much has been made of the concept of "synergy" over the past few years and how a teamwork environment can succeed against the odds. For the most part I consider this concept unrealized rhetoric. I can count the times that I have seen synergy occur in my life on one hand. Luckily, my facility is one of those where it occurs. Unfortunately, in the end many keepers leave the profession due to the management and politics of our industry. This is in my opinion, an unacceptable loss to the cause of conservation.

The bottom line is during this period of time the morale spirals down, apathy does set in, and people get careless. Carelessness leads to crisis management situations and threatens the lives of staff and collection. This is unacceptable as well. Complacency and apathy are the real danger to keepers and trainers on a daily basis. Unfortunately, many managers have yet to grasp that the productivity, safety, and well-being of the staff are tied to job satisfaction.

Personal relationships in the workplace are another possible source of conflict and stressors. I have had the privilege to work with some truly dedicated individuals who have enriched my life and that I call friends and peers. Conversely, I have worked with a few people that no one should be subjected to. Some of them fumble through life, others live to make everyone else's life as difficult as their own, and a select few live somewhere between codependence and dysfunction. Unfortunately, these people exist in every profession. That's life. I have learned from bitter experience in my life that the best thing to do is avoid these people altogether. Life is short, learn to enjoy it. Dating in the zoo environment can definitely be a plus providing you avoid the aforementioned categories. Still, when relationships go south, the keeper may not be paying attention, but the animals certainly are. Working with dangerous animals and distraction are incompatible behaviors. Also, as a general rule, it is considered bad karma to work in the same department with someone you are dating. This argument definitely has merit.

After being a zoo keeper, trainer, senior keeper, and now a curator, I would like to believe that I see the situation from both sides. If you ever had the thought that management is easier or more laid back, wrong. When you flip to the management side of the coin you get to deal with budgets, government, society, press, and the two things I despise the most, politics and telling the staff "sorry, it's not in the budget". For management the trick is to remember what it's all about, the animals. Luckily my position is a combination of Director and General Curator, which keeps me in contact with the collection on a daily basis. It keeps me grounded in why I do this for a living. Many managers are removed from the animal collection and this distance creates the illusion that everything is fine, when in fact it isn't. Operating in a power vacuum isn't effective management, it's foolhardy at best. Managing in this type of environment isolates you from the staff as well, leading to the problems mentioned in the earlier paragraphs. Also, it is the responsibility of management to hire people who can mesh with the team. If you hire problematic staff, then you have no one to blame but yourself.

Crisis situations have the ability to bring out the best and the worst in people. The hard part is that you probably won't find out the true measure of a person until the event actually occurs. The best way to address this is to be highly selective of your emergency responders and to train them thoroughly. Training is the key to increasing confidence, reliability and effectiveness.

Another factor which should be considered in reference to the previous column is that emotions will definitely come into play if a member of the staff is injured or killed. Conversely, if a member of the animal collection is killed, then the emotions of the staff should be a consideration as well.

So, in retrospect, I would say emotions have an ability to impact the zoo work environment.

Next month: What do you look for in an animal shipping crate?

If you would like to submit a question for this column or have comments on previously published materials, please send them to: AAZK, Inc., 3601 S.W. 29th St., Suite 133, Topeka, KS 66614 Attn: Reactions/AKF.

(About the Author: Since 1985 Bill has been active in the fields of science, zoology and wildlife management. His education and experience include a B.S. in wildlife management and post-graduate studies in zoology, Lab and Museum Assistant, Shoot Team Leader, ERT Member, Large Mammal Keeper, Senior Keeper, and Zoo Curator at various zoological facilities. His area of research is crisis management in zoological institutions, which draws upon practical experiences and training as a Rescue Diver, Hunter Safety Instructor, NRA Firearms Instructor, and Red Cross CPR/First Aid Instructor.)

AAZK, Inc. Announces New Enrichment Data Transfer Form

The American Association of Zoo Keepers is pleased to announce the release and availability of the Enrichment Data Transfer Form (EDTForm). The purpose of the form is to compliment the Animal Data Transfer Form (ADTForm) which is already in use by the zoological industry.

The EDTForm was conceived and designed by Kayla Grams, co-editor of the "Enrichment Options" column, and William K. Baker, Jr., author of the "Reactions" column, both of which appear monthly in *Animal Keepers' Forum*.

The EDTForm is printed front and back on 8 1/2" x 11" colored 70lb. stock paper. This streamlined format provides ample space for extensive data entries. Entry headings include institutional and specimen information, behavioral history, general background information, naturalistic/exhibit enrichment, food enrichment, artificial enrichment, safety concerns, and a comments section. As enrichment becomes important and more widely utilized within our industry, the EDTForm will allow enrichment history and information to be transferred with an animal when it is shipped to another facility.

The inaugural year 2000 printing of the Enrichment Data Transfer Form was underwritten by the Arizona-Sonora Desert Museum of Tucson, AZ. AAZK, Inc. We would like to thank ASDM for their encouragement of and funding for the EDTForm.

Institutional requests for the EDTForm should be sent to AAZK, Inc., 3601 S.W. 29th St., Suite 133, Topeka, KS 66614. As with the ADTForm, these are being provided free to the zoo community as a professional courtesy of AAZK, Inc.

See What You've Been Missing at the Columbus Zoo and Aquarium

With just over 550 contiguous acres, the Columbus Zoo and Aquarium is the third largest zoo in North America, having an incredible potential easily envisioned by what has already been accomplished. Dynamic transformations are occurring that create an enriched environment for the animal collection, the visitor and the staff and reflect many of the changes that happened industry wide in the last decade.

Animal exhibits that have opened during the 1990's in Columbus include aquatic displays like Discovery Reef, a 100,000 gallon artificial coral reef and associated marine exhibits and Manatee Coast, a 200,000 gallon exhibit featuring animals from the Thousand Islands region of the Florida coast. The bird collection has seen tremendous changes with the addition of a Humboldt penguin exhibit, an 81,000 cubic foot native Ohio neotropical migrant songbird aviary and opening in the summer of 2000, a walk-through aviary featuring birds of central Africa. The reptile and elephant facilities both received major renovations in 1998 and now have little in common with the philatelic exhibits they once were.

In the summer of 2000, new exhibits featuring okapi, drills and other species native to central Africa will open in an area of the zoo that already includes a 3/4-acre mixed species bonobo and red river hog yard and a gorilla complex that is as varied and flexible as the staff's management approach. All animal exhibits are being developed in team managed zoogeographic regions that hold the promise of remaining dynamic learning centers for public, staff and animals.

Visitors to the Columbus Zoo and Aquarium are provided with many opportunities to vary their experience. A 70-year-old wooden horse carousel is being refurbished and will reopen this summer, representing a unique piece of zoo history. The zoo also has a multi-use pavilion featuring space for lectures and seasonal education programs, animal shows and ice-skating. A food court opened in 1999 and has five venues and can seat over 300 people. As well, the zoo is associated with the only water park in the central Ohio region and an 18-hole public golf course. However, what makes the Columbus Zoo and Aquarium a world-class attraction is the people. With the overwhelming support of the central Ohio community and especially the zoo's trustees, the staff and volunteers are uniquely Columbus. A blend of fun and fanaticism mixed with liberal amounts of fertilizer create the ideal environment to grow ideas.

---D. Winstel, Asst. Director

Conference 2000 Call for Photos!!

We are trying to put together a photo display for the conference in Columbus and are currently collecting pictures from the past AAZK National Conferences. We are starting from scratch, as the old albums seem to be lost. The more pictures received the better. Pictures will not be able to be returned, so please be sure to send us a copy if they are important to you. On the back of the photo, please include the following: People/persons name(s) who are pictured and which conference it was from. We would like to receive these pictures before June 5, 2000, if possible. You can call me with any questions at (614) 645-3464. Please send the photos to: Scott Shelley P.O. Box 1256 Powell, OH 43065.

Conference 2000

Columbus Zoological Gardens

October 8 - 12, 2000

Powell, Ohio



FIRST CALL FOR PAPERS

This Year's Conference theme is
"AAZK 2000: Beginning a New Millennium"

Suggested topics include:

- Keeper skills necessary to move into the future
- Conservation projects - in situ and ex situ
- Expanding keeper roles - studbook keeper, visitor educator, etc.
- Enrichment
- Training

Abstracts must include the following information:

- Name of presenter and co-authors
- Zoo or aquarium affiliation
- Position or title
- Title of paper or workshop
- Short bio of yourself (for introduction)

Please limit abstracts to one to two paragraphs. Abstracts must include in detail the significance of the topic to be presented along with the results, conclusions, or benefits of the work described. Poorly written abstracts or those not containing the proper submission information will be returned.

•The deadline to receive abstracts for all presentations is 1July 2000•

Copies of your abstract should be sent to the following persons:

1. Gretchen Bickert, Conference 2000 Program Chair, AAZK Columbus Chapter
P.O. Box 1256, Powell, OH 43065

Fax Abstracts to:
(614)645-3564

E-mail Abstracts to:
gbickert@colszoo.org

2. Jeff Phillips, National Program Conference Chair
136 Harpersfield St., Davenport, FL 33837

Fax Abstracts to:
(407) 939-6391

E-mail Abstracts to:
jeff_phillips@worldnet.att.com

ABC'S

Animal Behavior Concerns & Solutions

A Question and Answer Forum for the Zoo Professional

By Diana Guerrero, Independent Behavior Consultant,
Ark Animals of California, San Diego, CA

Question

American Zoo. Can you discuss the training term, "deprivation"?

Answer: Part 1 of 2

Deprivation is a word that can become an emotional topic for many people. Unfortunately there is a misunderstanding in relation to using the term "deprivation" and many get into judgmental modes when it relates to the usage/non-usage of this training tool. It is a tool that has been used in captive animal management for eons. So, let's look at what the term actually means:

dep-ri-va-tion

(14th century)

to take something away; to remove from; to withhold something from

(15th century)

the state of being deprived; an act or instance of depriving

(20th century training definition)

reducing the availability of, or access to, a reinforcer

Notice that there is nothing in the definition that indicates a length of time (duration) as related to deprivation. Notice also that the definitions do not refer to a particular type of withholding or reduced access.

Background

Animal rights, public perception and ego or judgements have influenced many of the current discussions and views related to deprivation. When an interpretation of a positive or negative value is attached to a word the opinion is often based upon that influence. How you use the term can vary, how you use the application (and the results you get) can also vary. All animals in contact with humans tend to experience some sort of deprivation. In fact even humans experience deprivation on a daily basis!

Despite the 20th century definition, the term in the training realm has unfortunately become heavily associated with food and has been assigned a negative value judgement. This stems from a variety of contributing situations including animal rights demands, public relations pressure, and the marketing of "positive reinforcement" training to the general public. The terms "positive reinforcement" and "deprivation" can be misunderstood by people (like the

general public) not familiar with learning theory and applications of reinforcement.

Trainers who have invested heavily in academics, debating, defining, categorizing, and other activities often consider deprivation an ugly word. Other trainers within the field have a variety of views that stem from the difference in seeing how the industry has changed, repeated itself, and evolved. Nearly all have also used deprivation in their career in one manner or another.

Most trainers do not agree on everything but good trainers use a variety of tools in their applications and do not lean on one completely to the exclusion of the others. Deprivation is only one of many tools and can be used to influence an animal within many categories including: dietary, social, and environmental.

Discussion

Deprivation is only one tool in the toolbox. The biggest problem we face as trainers, or caretakers, is being adaptable and flexible enough to use the tools of the trade with wisdom. You should be able to be creative and innovative enough to take some information in one situation and apply it to others. Help from other people can be useful but it is the application of what you have collected and learned that makes you a great trainer/caretaker.

Each animal and species is different and so each has different needs. What works for one will not always work for others. Some individuals in a species may be very social, while others might not be. They might be the same weight but not eat the same amount of food. Animals may expend the same energy or be more active or sluggish than others. They may be amiable, flighty or a variety of other things (you can fill in the blanks). They may be motivated by food, social interactions or not affected by them at all. This is why blanket discussions on this topic can be difficult.

Predictability and uniformity contribute to behavioral problems. Correcting behavior problems means using whatever tools you have. Thinking outside the box is what you have to learn how to do in order to progress as a trainer. To get out of the box let's look at some questions. These are for you to mull over and discuss.

Dietary

If the diet is dispersed over several sessions instead of once or twice is that deprivation? If one marine mammal receives a certain quantity of fish as a daily total ration, is it deprivation if he receives 60% of that? What about if the other 40% is given at the end of the day or a diet increase is made to compensate over the next day or days? What if only 10-20% is withheld for a day or two? When it is withheld for weeks? When does a reduction begin to be called abuse? What if the animal needs veterinary treatment and is pulled off of food and water, is that deprivation? What if the animal is overweight and some items are withheld from the diet, is that deprivation? What if the animal is a carnivore and is fasted a day every week, is that deprivation? Are these all situations that you would term deprivation? If not, why not?

Social

In the social realm, depriving an animal of contact with others may be acceptable to the animal or it may be disconcerting. So, is it deprivation if the animal is being abused by others in the social group and then is removed (temporarily or permanently) from the group? What if the animal is injured and is removed from the group for veterinary procedures, is it deprivation? What if the animal is injuring others and is removed?

Let's look at an animal that is motivated through the social interactions: If it won't come into the night quarters and you separate it from the others to motivate it to come in, is that deprivation? What if he comes in each night after that experience without any more trouble? How about the reverse situation where he won't go out for the day?

Environmental

Is it deprivation if you confine an animal when it is injured to prevent further injury? What if the animal is highly aggressive to keepers, trainers, or other animals and you confine it for safety, is it deprivation? Since the animal cannot have free access to the exhibit and night quarters at all times concurrently, is that deprivation?

Do you see how this topic becomes a bit complex? It might be more useful to use the terms such as captive management, dietary management, social management, and environmental management rather than deprivation. However, then we just get into more rhetoric and move away from training applications.

Join me in the Part Two next month and we will explore this topic further.

About the Author: Since 1978, ARKANIMALS.COM Director, Diana Guerrero has worked professionally in a variety of animal facilities. Attending and completing courses in both animal management and training from institutions both here in the United States and Europe, she has been affiliated with some of the best organizations. She is an alumni of The Moorpark College Exotic Animal Training & Management Program, The Gentle Jungle Animal Affection Training School, The International Training Centre at the Jersey Wildlife Preservation Trust, and special program extensions with Marwell Zoological Park and Kent University. Guerrero started her career in the marine mammal field working as a naturalist, and subsequently became involved with terrestrial animals in zoos and other facilities. Guerrero writes a variety of animal-related columns, including the popular series, Unusual Animal Careers and does seminars nationally. Watch for two of her book projects in the summers of 1999 and 2000! Questions for ABCs should be submitted to Diana directly via e-mail:> arkabc@arkanimals.com< or via regular mail to ARKANIMALS.COM, P.O. Box 1154, Escondido, CA 92033 USA.

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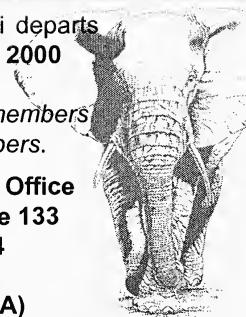
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Reproductive Parameters in Female Giraffe (*Giraffa camelopardalis*) at Brookfield Zoo

By
Roger Reason, Senior Keeper
Brookfield Zoo, Brookfield, IL

Giraffe (*Giraffa camelopardalis*) have been held in zoos in the United States for more than a century with the first being three individuals acquired by the Central Park menagerie in 1872. However, in spite of their long history in captivity in this country, consistently successful reproduction was not achieved until the 1950's. Since that time more than 1800 calves have been born in American zoos (LaRue and Lackey, 1996).

As anyone who has worked with giraffe knows, the basic information on female reproductive parameters such as length of gestation or length of the estrus cycle is usually passed on by word of mouth from one generation of keepers to the next. But how well is this information actually documented? Also, what other less well known parameters would be useful in interpreting the overall reproductive picture for this species? In an attempt to provide some insights on these questions, reproductive information was collected from female giraffe at the Brookfield Zoo. The results are shown in Tables 1 and 2.

Length of Estrus Cycle

Brookfield Zoo's giraffe come into estrus every two weeks in regularly cycling animals, an observation consistent with that of Lang (1955). There are, however, intermittent periods where estrus occurs at 1-3 month intervals. No obvious explanation accounts for this anomaly. It does not seem to have a seasonal basis since these periods do not coincide in different individuals. Stress due to unusual events which temporarily suppresses cycling or early fetal death requiring a period of time for the fetus to be reabsorbed and estrus to reoccur are two possibilities. Hormone monitoring through urine collection would be helpful in evaluating this situation.

Udder Development

Udder development appears to have two stages, an increase in the size of the teats followed by milk production in which actual bagging of the udder can be seen. In Brookfield Zoo's giraffe, enlargement of the teats starts an average of 19 days before delivery and milk production occurs about two days before delivery. The second parameter, while not infallible, can be a good clue that birth is imminent. This is in contrast to the contention of Kristal and Noonan (1979) that such physical changes are not accurate predictors of the timing of a birth, but their observations are based on a single animal.

Length of Labor

Length of labor for giraffe at Brookfield Zoo varies considerably but averages about 2 3/4 hours. This is somewhat longer than the typical labor of one to two hours mentioned by Dagg and Foster (1976) and Lee (1991). The upper end of the range of variation suggests that any labor lasting longer than five hours may be a cause for concern.

Time of Birth

Time of birth data shows that twice as many births occur during daytime hours than at night. Backhaus (1961) reports a similar observation, also in captive giraffe. This is somewhat unexpected since it would seem more likely that parturition would occur at a

quieter and less busy time. Giving birth during daylight hours may be a holdover adaptation from the wild which facilitates the ability of these visually oriented animals to detect approaching predators through this vulnerable period.

Gestation

Reports from the literature regarding giraffe gestation vary from 14 1/2 months (Spinage, 1968; LaRue and Lackey, 1997) to 15 months (Backhaus, 1961; Fowler and Boever, 1986). The average gestation of Brookfield's giraffe falls within this range. Dagg and Foster (1976) state that first pregnancies may be slightly longer than subsequent ones, but this is not supported by observations on giraffe at Brookfield.

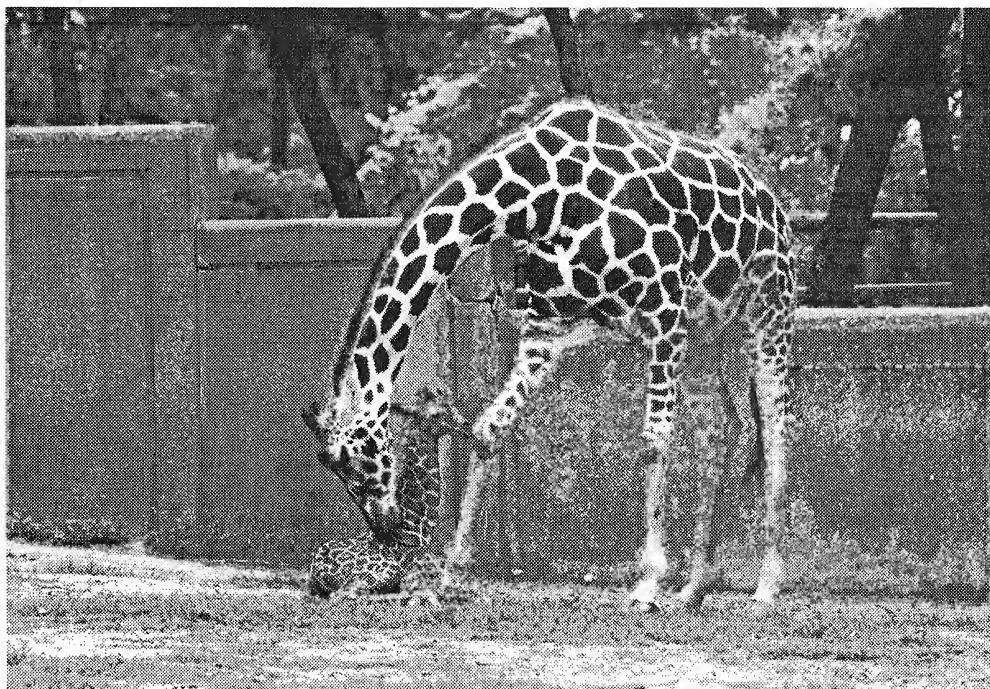
Placenta Passed

Information from the literature on how long post-delivery the afterbirth is passed varies widely, ranging from 2hr. 16 min. (Kristal and Noonan, 1979) to within nine hours (Dagg and Foster, 1976). Giraffe at Brookfield Zoo pass the placenta an average of about 5 1/2 hours after delivery but this figure is somewhat deceptive due to a single case of placental retention for more than 18 hours. If this unusual occurrence is disregarded, the maximum time drops to less than 5 1/2 hours and the average is about 3 3/4 hours.

Post-Partum Estrus

Spinage (1968) mentioned that female giraffe are capable of remating two months after giving birth. Limited information from a single individual at Brookfield Zoo suggests 2 1/2 - 3 1/2 months before cycling resumed.

It is interesting to note that even for a relatively well known species like the giraffe, some of these points remain open to question. Much of the information provided here is preliminary and more study could be used to further document the above mentioned parameters as well as explore other areas of giraffe reproduction.



Mother giraffe cleaning newborn calf at Brookfield Zoo. (Photo ©Chicago Zoological Society Audiovisual Services. Photo by Mike Greer)

Table 1. Reproductive parameters in female giraffes (*Giraffa camelopardalis*) at the Brookfield Zoo.

	Number of animals	Number of observations	Average	Range
Length of estrus cycle (days)	2	25	14.2	13-19
Enlargement of teats (days prior to delivery)	4	7	19.4	11-35
Milk production (days prior to delivery)	2	4	2.0	1-3
Gestation (days)	5	21	446.1	429-473
Length of labor (hr:min)	4	11	2:48	1:16-5:00
Placenta passed (hr:min after delivery)	6	9	5:24	1:55-18:00
Post-partum estrus (days after delivery)	1	2	95.5	79-112

Table 2. Time of birth for giraffes (*Giraffa camelopardalis*) at the Brookfield Zoo.

	0000-0600	0600-1200	1200-1800	1800-2400
Number of births	6	8	11	3
Percent of total	21.4	28.6	39.3	10.7

Acknowledgments

I would like to thank the various keepers who participated in collecting this information over the years, and Nancy Bent, Ann Petric and Nancy Saunders for providing comments and suggestions on a earlier version of the manuscript.

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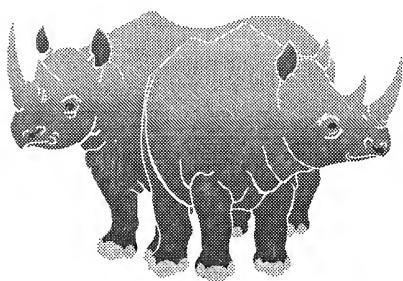
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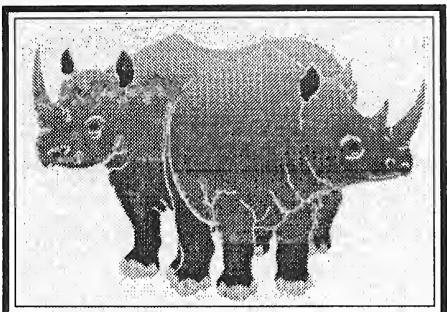
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Bowling for Rhinos Passes Million \$ Mark

AAZK's Bowling for Rhinos (BFR) enters the new Millennium having raised \$1,240,277.21 for rhinos worldwide. The total raised for 1999, another successful year, was \$135,625.36. This is \$10,000 higher than our totals for 1998. A big "Thank You" to everyone who worked so hard to continue the BFR success story. Our efforts have helped to "stabilize rhino populations worldwide."



There are now 23 black and 28 white rhinos (April '99) on Lewa Wildlife Conservancy, along with over 600 Grevy zebra (20% of the world's population of this species), and 170 elephant. There are over 15 lion, wild dog, and leopard including one black leopard residing on Lewa. The Conservancy has been gaining strength over the past few years but it is still built on a fragile financial foundation. Funding for the heavy security costs is dependent on tourism and donations. Budgets have always been tight so that they have had to depend on old, unreliable and expensive vehicles and equipment. Lewa's goal is to build sustainability with longer-term strategic planning and establishment of an endowment fund that will allow them to survive the difficult times - natural and manmade - that Africa can be relied upon to provide. Our continued support will provide some of the operating costs for the Conservancy.

The word at the two Indonesian BFR sites, Ujung Kulon and Bukit Barisan National Parks, is that the country is "reasonably sedate" after the past couple years of political unrest. Ujung Kulon is continuing the rhino photo census which BFR has funded. Preliminary results show about 50 animals in the park, so no dramatic increases or decreases to note, and the same seems to be true in Bukit Barisan.

Tom Foose of the International Rhino Foundation was thrilled that BFR was able to raise \$10,000 more than the previous year. BFR has helped fund training and operating costs of Rhino Patrol Units (RUPs) in Bukit Barisan. The cost of running an RPU has risen from \$12,000 to \$17,000 a year now due to inflation and the currency exchange rate not being as favorable as in the past.

Both parks are confronting a 15-20% increase in fuel costs. Indonesia has always subsidized fuel costs but the new government is reducing subsidies and there is a general global increase in cost. Vehicles will need to be replaced in the near future at a cost of about \$19,000 each. There is a need for more RUPs in order to cover the Northern area of Bukit Barisan which is thought to be marginal habitat for the rhino. This is where most of the poaching has occurred in the past because there currently are no patrols in this area.

The need for AAZK's BFR continued support is critical for the success of all of these areas. I am setting BFR's 2000 goal at \$150,000 which would be out best year ever (\$149,248.86 in '96). If everyone sets their Chapter goal at 10% higher than last year, this goal can be reached. It takes a great deal of effort to hold an event each year, but the results of saving rhinos (and many more species) is well worth it and everyone should be very proud of the work done in the past. Let's keep our efforts strong and see what a difference we can all make together!

BFR Website: <http://www.bfr.aazk.org>

-Patty Pearthree, National BFR Chair

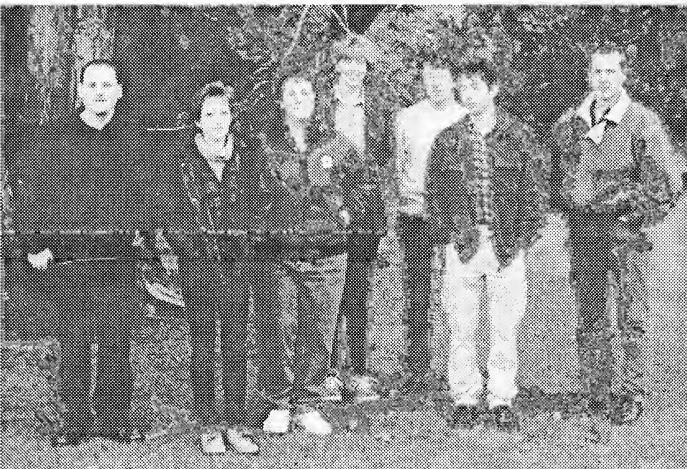
An International Meeting of Keepers

By Jeannette Beranger, AAZK International Outreach Committee Chair

Roger Williams Park Zoo, Providence, RI

In November of 1999, I had the pleasure to be part of an interesting meeting held at the Institut Rural de Carquefou in France. This school is an agricultural college near the city of Nantes and has the oldest known program for studies in zookeeping within France. Former students work within zoos throughout France as well as in other countries in Europe. Graduates of this program got together last fall to form the new Association Francophone Soigneurs Animaliers, the French equivalent to the AAZK. They hope to encourage not only the graduates of Carquefou to join, but anyone interested in zookeeping as a career to be part of the association.

The French had invited representatives from all of the known keeper associations around the world to attend the meeting and give presentations on the activities and goals of their organizations. Lee Houts, Chair of the AAZK Enrichment Committee, and I were lucky enough to be able to go on behalf of AAZK. Others who attended included Darren McGarry of the Association of British Wild Animal Keepers (ABWAK), and Jan Vermeer of

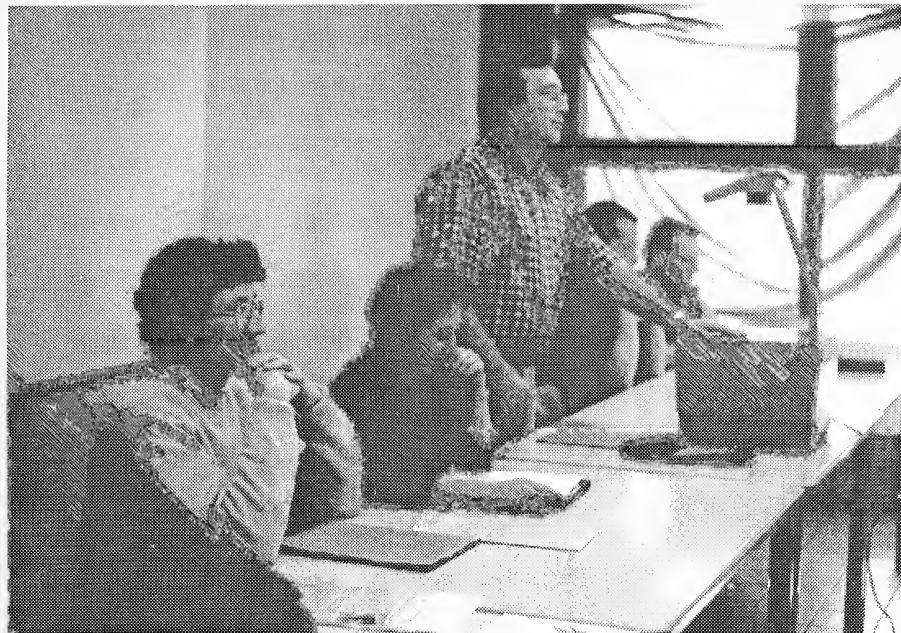


Shown l to r: Darren McGarry (ABWAK), Beatrice Dupuis, new President; Jeannette Beranger AAZK/IOC; Lee Houts, AAZK Enrichment Committee Chair; Michael Michault, new Secretary; Pierre-Yves Paty, new Treasurer; and Jan Vermeer, Dutch Zoo Kepers Association..

the Dutch Keepers Association. I was asked to give a presentation on behalf of the Australian Society of Zookeepers (ASZK) when, at the last moment, they were unable to attend.

The Keeper's Congress went smoothly and an executive board was elected. They are now an official non-profit organization. The success was largely due to the efforts of Beatrice Dupuis (the new President), Mickael Michault (the new Secretary), and Pierre-Yves Paty (the new Treasurer). With the sponsorship of the Institut Rural de Caquefou and the aid of the head of the zookeeping program, Alain Logiou, they were able to hold the meeting at the school and house the participants within the dorms.

After the meeting the visiting representatives of the foreign keeper associations were invited to visit several French zoos within Brittany. During our visit much was discussed about future relations between all of our organizations. We want to meet again at the upcoming AAZK Conference in Columbus this October to continue discussions and perhaps meet with other representatives from Germany, Australia and Canada along with those who were in France. It's an exciting time of development of relations with other keeper organizations and with the advent of the Internet, many communication barriers have been overcome. We have more in common with our fellow keepers abroad and it's a great time to learn from each other and promote professionalism within the career of zookeeping.



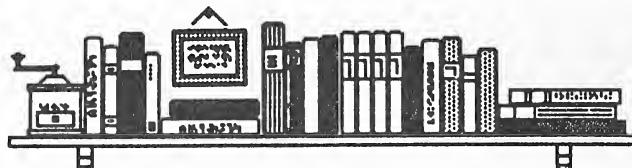
Shown l to r: Michael Michault, new Secretary; Beatrice Dupuis, new President; Alain Logiou, in charge of zookeeping program at Carquefou; Jan Vermeer, Dutch Zoo Keepers Association.; and Darren McGarry (ABWAK). Discussions were held with members of keeper organizations from around the world as the French zookeepers formed their new Association Francophone Soigneurs Animaliers.

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Review

FERRETS - Health, Husbandry and Diseases

By Maggie Lloyd, MA, Vet MB, Cert. LAS, MRCVS

Veterinary Services, University of Oxford, United Kingdom

1999 Iowa State University Press, 2121 S. State Ave., Ames, IA 50014-8300
208 pp. Softcover \$44.95

*Review by Stacey Mulkey-Biefeld,
Volunteer Intern
Louisville Zoo Conservation Center
Black-footed Ferret Breeding Program
Louisville, KY*

FERRETS - Health, Husbandry and diseases was written primarily for the European market. The forward to the text, written by Michael Oxenham, B. Vet. Med., MRCVS, states that most published literature regarding the ferret comes from the United States, making the need for a "Uk-oriented" volume important. It is also, however, made clear that many of the diseases discussed in the text are not yet seen in the UK, establishing the book as a valuable reference for its intended audience of veterinary technicians, practitioners, and students in both the United States and Europe. A brief, but very interesting, history of *Mustela putorius furo* domestication is included in the Preface.

The book itself is presented in four sections. Section One, Biology and Management, covers anatomy, behavior, nutrition, breeding and routine preventive care. The information presented is extremely thorough, including tables on nutritional requirements and routine vaccination schedules. Breeding ferrets can be a difficult task, and the section on this topic is especially useful as it anticipates possible problems and identifies their solutions.

Section Two: Diseases: A Systematic Approach, encompasses ten chapters and is an outstanding descriptive reference guide. Each disorder is introduced with ethiology and pathogenesis, clinical signs, and diagnosis followed by treatment and control descriptions. Prognosis is given in many cases and all information is thorough and well-researched.

Section Three, Approach to Clinical Examination and Diagnosis, is a short section encompassing everything from handling and examining the ferret to post-mortem procedure. It includes details of a number of surgical procedures, sample collection, and drug administration. Biological Data is given in Section Four, including biomedical, hormonal, hematological and general information. Appendices One and Two include listings of Differential Diagnosis for common Presenting Signs and Drug Doses for Use in Ferrets, respectively.

The most impressive aspect of *FERRETS, Health, Husbandry and Diseases* is the list of Further Reading suggestions for each chapter. The author has drawn extensively on works in the field and presents concise, detailed information in the space available, for further information on each topic, a wide-range of references is given. For instance, Section Two Chapter 6: Diseases with Respiratory Signs, while nine pages in length, has a suggested further reading listing of 11 reference materials.

While this text was not intended for the casual ferret pet-owner, it may be a very helpful addition to the bookshelf of those breeding or keeping multiple animals in a group situation. It will be, undoubtedly, an invaluable addition to the reference library of small animal practitioners.

Otter Interest Group Plans Meeting

AAZK Otter Interest Group Met
and Will Meet Again!

By Jan Reed-Smith

John Ball Zoo, Grand Rapids, MI

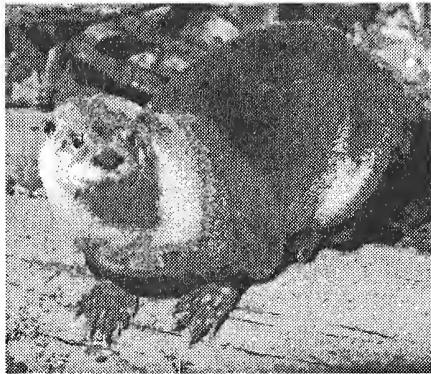
In 1998 a group of people interested in otters met informally over lunch during the AAZK National Conference in Indianapolis. We found it not only fun to share some of our otter experiences but also beneficial to talk about shared problems and concerns.

In Portland at the 1999 National Conference the group organized a bit more, meeting for one and a half hours of informal discussion. Twenty-eight people gathered this time and while we did not have any formal presentations, training and enrichment issues were discussed with input from Beth Stark, AAZK Chair of the new AAZK Animal Management Committee and Lee Houts, Chair of the AAZK Enrichment Committee.

Some of the specific topics discussed were: 1) Possible methods of discouraging a female North American river otter from carrying her foot around. This was a behavior begun when she injured the foot and continues whenever she is stressed, prevented from doing something she wants, needs comforting, or, is bored. The behavior is not seen when she has pups. Suggestions included documenting when she carries her foot, allowing the female to have access to holding during the day, and the use of a remote enrichment device. 2) Enrichment warning: one facility had to anesthetize an otter to remove cardboard that had become stuck around its mouth when it got wet and then dried. 3) Some of the enrichment ideas reviewed included the use of curry powder as a deterrent (some success was reported), coffee beans, fennel, blue berries, red zinger tea, ghost shrimp, mint and cat nip scattered around were all successful at at least one facility with N. A. river otters or Asian small-clawed otters. Another interesting enrichment idea was the use of a cooled grapevine ball with crickets inside (Indianapolis Zoo). Because the crickets are cool they start out moving slowly, as they warm up they begin to emerge from the grapevine ball, creating an amusing toy with some lasting power - hopefully.

What next? We will meet again in Columbus during the 2000 AAZK National Conference. Mark it on your calendars, Monday, October 9th at about 1 p.m. (we will have to wait until a little closer to conference time to set a definite time). This year we will have a slightly different format.

First, we have all afternoon.



Hairy-nose otter (*Lutra sumatrana*) from Thailand. (Photo by Jan Reed-Smith)

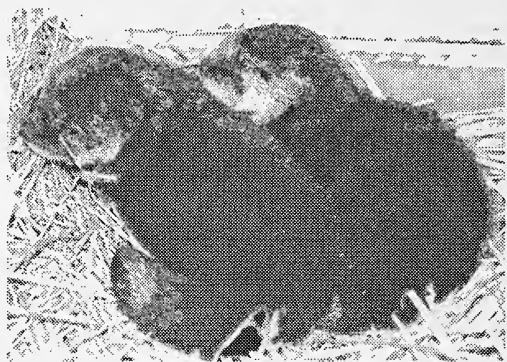
Second, we will have a few speakers for the first half of our session. Dusty Lombardi, General Curator at Columbus will talk with us about the Asian small-clawed otter SSP. Tim French, Curator of Mammals at Toledo Zoo will speak about the African Cape clawless otter and some of his experiences working with N.A. river otters. Chris Dwyer, State of Ohio wildlife biologist will share a new Ohio otter recovery plan he has worked out and cover some of the issues facing wild otters. Additionally, I hope to get someone who had done a significant amount of training work with otters to come and talk about this aspect of otter work. (If anyone wants to volunteer to do this, or knows someone who would be good please contact me!)

The last half of our session will be open to discussion, video watching, whatever we want to do. Personally, I would like to discuss introductions and some of the recent cases of hair loss.

So, let me know what you think, if you are interested and if you would like to have a specific topic placed into discussion.

Hope to see you there!

Jan Reed-Smith
John Ball Zoo
(616) 336-3907 fax
jrsotter@iserv.net



Asian small-clawed otter (*Aonyx cinerea concolor*) (Photo by Joan Ryskamp)

AZA 2000 Western Regional - El Paso

The friends, families, volunteers and staff of the El Paso Zoo & The El Paso Zoological Society cordially invite all AAZK members to visit the great American Southwest and attend the upcoming AZA Western Regional Conference **April 5-8, 2000**. The theme of the conference is "Zoos and Aquariums: On the Edge (Nature Knows No Borders is the the sub-theme). As of early February the following sessions, round tables, workshops and panel discussions were scheduled to be included in the program: Avian Conservation: How Zoos and Aquariums are Contributing; An AZA Accreditation Training Session; a meeting of the Educators of the Zoo and Aquariums of California [EZAC]; International Migratory Bird Day; an AZA Conservation Roundtable; An AZA Panel Discussion on Partnerships with Schools - National & Local Perspectives; Thick-bill Parrots; Herp Research on the Border; Herp Workshop: Consequences and Effects of Lighting on Vit D3 Levels; a meeting of the Graphics Action Committee; A World Wildlife Fund Workshop: Teaching Biodiversity - Windows on the Wild; Miniworkshop on Mexican Wolves; Two sessions on elephants; AZA's Meso-American Conservation Action Partnership; and AZA Conservation Education Committee. For information contact Scott Gilliland or John Kiseda at (915) 521-1850.

The Behavioral Effect of Reintroduction of a Hand-Reared Lion Cub to Her Social Group

By *Meredith J. Bashaw, Mollie A. Bloomsmith, Terry L. Maple*
TECHlab, Zoo Atlanta and
School of Psychology, Georgia Institute of Technology

Wild African lionesses (*Panthera leo*) often abandon their first few litters of cubs, presumably because they do not know how to care for them or are unable to do so. Sometimes, other females in a pride will help a young lioness raise her cubs, occasionally even adopting them (Schaller, 1972). As a wild lioness ages, the probability of abandoning a litter generally decreases (Schaller, 1972). Because groups of captive animals are generally intended to maintain the genetic diversity of a population, they are often composed of unrelated females of the same age, unlike in the wild. This eliminates the opportunity for an older lioness to assume the duties of raising a young female's cubs. To compound the problem, stress caused by captivity has been suggested as a cause for abnormal maternal care, ranging from overgrooming to neglect of offspring (Hutchins, Hancocks, & Crockett, 1983; Snyder, 1975). This abnormal maternal care creates a dilemma for zoos.

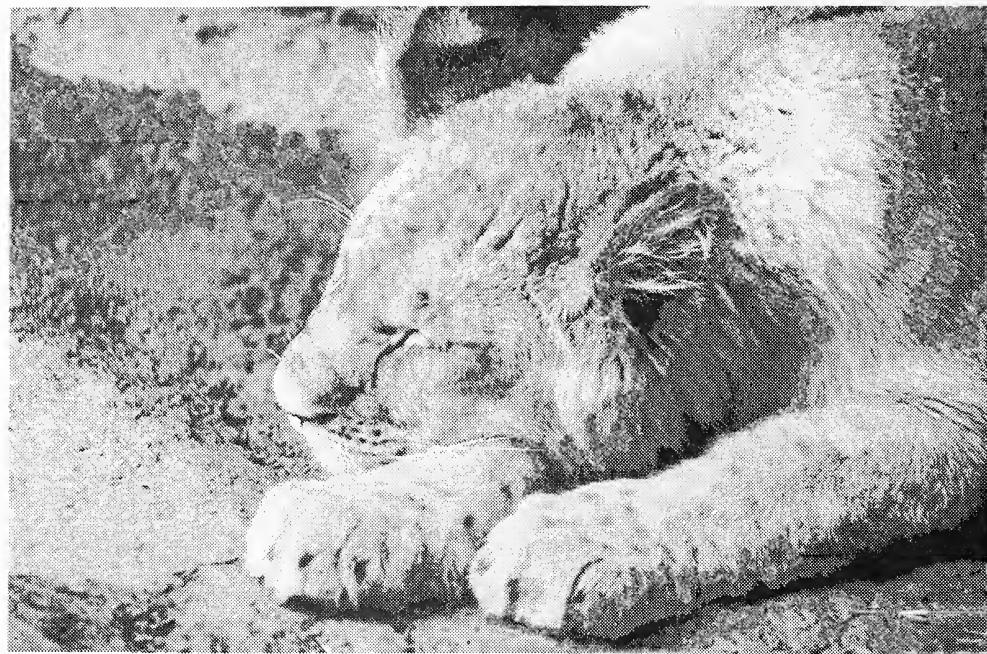
Captive lionesses of all ages often give birth to cubs and then refuse to suckle them (M. Fouraker, pers. comm., 11/97). Because other, unrelated lionesses in their group rarely show any interest in the cubs, zoo keepers usually remove these cubs from their mothers and hand-raise them to ensure survival. Hand-raised cubs are later reintroduced to groups of lions, which may or may not include their mothers. Unfortunately, there is no published literature documenting this process, despite its importance to the management of these animals. At Zoo Atlanta, keepers were faced with a female lion that only allowed her cub to suckle twice in two days, and seemed to become increasingly indifferent to her vocalizations (R. Sartor, pers. comm., 12/97). This was inadequate care by comparison to the wild, where Schaller (1972) observed that cubs typically suckled 4-6 times a day, for a total of about an hour per cub. The female cub was born 28 July 1997, and was taken from her mother 30 July 1997. This situation provided an opportunity to study the reintroduction of this cub (see photo) to her dam and one other unrelated female.

The aim of this project was threefold: (a) to investigate potential consequences of hand-rearing as related to reintroduction, (b) to provide insight into behavioral implications of current reintroduction practices used by Zoo Atlanta, and (c) to provide comparative data for studies of other methods of reintroduction of hand-reared immature animals. These aims all support the larger goal of enhancing animal well-being by increasing the success rate of reintroductions of hand-reared social carnivores. To achieve the project goals, we measured levels of aggressive and social behaviors associated with a common captive management practice.

Method

Subjects

Subjects were two African lionesses, Claserie (born 11/92) and Kalahari (born 7/93), and one female cub, Kariba (born 28 July 1997). Because lionesses become reproductively mature when they are about four years old, those at Zoo Atlanta are both young adults. The adults were wild-born orphans that were also hand-reared before being moved to Zoo Atlanta. The cub was captive-born and hand-raised at Zoo Atlanta after her dam,



Kariba, Zoo Atlanta's female African lion cub, at 6 months old. *Photo courtesy of Joe Sebo, Zoo Atlanta.*

Claserie, allowed her to nurse only twice in two days. Kariba is Claserie's second cub; her first also had to be hand-reared.

Procedure

Behavioral data were collected in three phases. The baseline data were collected while the two adult females were together and the cub was physically isolated from them. Introduction data were collected only on the animals involved in introductions, and the second baseline data were collected on all three lions in a single group. During baseline sessions, each lion was observed for 30 minutes each day, between 1600 and 1800 hours. During reintroduction sessions, behaviors of all lions involved were recorded. Due to staff availability, reintroduction sessions were conducted between 0930 and 1130 hours. Introduction data were collected for the first 30 minutes that the lions were allowed access to each other. To provide an additional comparison to the baseline measurements, data were also collected on the newly established social group one month after the reintroduction was complete. These data were collected with two consecutive sessions on all three lions in the same social group to maintain the same pattern of data as in the baseline.

Observation sessions began approximately ten minutes after a researcher entered the holding area to allow the lions to become acclimated to the presence of the observer. Data were collected using 30-second instantaneous group scan samples (Altmann, 1974). Behaviors recorded in scan samples included posture, facial expression, social behaviors, and vocalizations (see Table 1). Additionally, both contact and non-contact aggressive behaviors were recorded in an all-occurrence fashion (Martin & Bateson, 1986). Two individuals conducted observations. They measured reliability during simultaneous data collection and met a criterion of 90% identical scores (Martin & Bateson, 1986).

Introduction Protocol

Prior to introductions, the cub was housed in a den with auditory, olfactory, and visual access to all other lions not on exhibit at the time. During the day, the cub was often allowed access to the neighboring den and to half of the outdoor patio in the holding area. In either of these locations, she could have tactile contact with neighboring lions through the 2.5 cm openings in the wire mesh. The cub was observed on several occasions to rub and play with both other females through the mesh.

First, the cub was reintroduced to her dam. The dam and the other adult female were separated, and the cub and the dam were allowed access to each other for daily morning sessions beginning on 17 March 1998. Initially, all keepers were present and ready to intervene in the event of aggression, and the lions were allowed access to one another for 30 minutes. After two successful 30-minute sessions on consecutive mornings, the lions were allowed to stay together for about an extra 30 minutes each day. As the introduction

progressed without any major setbacks, fewer staff members were present for introduction sessions. After one week, the dam and the cub were able to stay together for several hours at a time unsupervised, and introductions began between the other adult female and the cub. This pairwise introduction began on 26 March 1998 and was performed in the same manner as the one between the dam and the cub.

After all pairs were introduced, the three lions were introduced as a group on 3 April 1999. They were separated into three dens and all doors were opened simultaneously to avoid a situation in which one lion might be an outsider to the group. Again, introductions were initially brief and highly supervised. The lions were left together for longer periods and were less closely supervised as time went on. On 12 April 1998, they were allowed into the exhibit together. This marked the end of data collection for the introduction phase.

Table 1: Sample ethogram for data collection

Behavioral Category	Included Behaviors
Posture	Resting
	Alert
	Standing
	Locomoting
Facial Expression	Not visible
	Relaxed face
	Yawning
	Alert face
	Flehmen
	Tense face
Social Behavior	Bared-teeth face
	Face not visible
Vocalization	Rubbing
	Social licking
	Social play
	Non-contact aggression
	Contact aggression
	Roaring
	Aggressive vocalization
	Other vocalization

Data Analysis

Because each lion had a different introduction experience, the data are not comparable across lions. For this reason, data were graphed by lion and phase to identify trends. Differences in means that appeared to be significant were further investigated with t-tests assuming unequal variances and using each session as an experimental unit. To compensate for both the unplanned nature of the tests and the multiple comparisons, a p-value of .001 was used to establish significance. This p-value was obtained by dividing .05 by the number of tests conducted, 54 (Hays, 1994).

Results

Ten hours of data were collected in each phase. Graphs revealed different effects of introduction on each lion, so significant results are shown for the dam (C), the other adult female (KL), and the cub (KR) individually. However, graphing the data yields changes that are similar across all lions. Some of these trends were graphically apparent but not statistically significant (as indicated by an NS in text). These trends can be divided into three different types. First, aggressive behaviors, including tense face (C $t=-5.22$, KR $t=-9.52$, $df=39$, $p<.001$; KL $t=-10.55$, KR $t=-10.84$, $df=35$, $p<.001$, see Figure 1) and non-contact aggression (NS) increased in pairwise introductions. Tense face (C $t=-4.95$, KL $t=-6.42$, KR $t=-12.67$, $df=35$, $p<.001$, see Figure 1), bared teeth (NS), and contact aggression (NS), increased during group introductions. All of these aggressive behaviors returned to baseline levels in post-introduction data. Affiliative behaviors, including flehmen (NS) and social licking (NS), also increased in adults during both pairwise and group introductions. Social play increased over baseline in the group introduction (C $t=-5.67$, KL $t=-10.89$, KR $t=-6.44$, $df=35$, $p<.001$, see Figure 2), and continued to be higher than baseline in the post-introduction observations (KL $t=-4.50$, KR $t=-3.19$, $df=49$, $p<.001$, see Figure 2). Other behaviors, including resting (NS) and relaxed face (NS), decreased during introductions and returned to baseline in the post-introduction period.

Discussion

The lions showed increased aggressive and affiliative behaviors on introduction. These behaviors all returned to their baseline levels one month following introductions with the exception of social play, which continued to be higher than during baseline. Because of the data collection technique employed, where behaviors within posture and facial expression categories were mutually exclusive and exhaustive, any changes in behavior had to be balanced. That is, if an increase in one behavior occurred, there must have been a corresponding decrease in the other behaviors in that category. This helps to explain the decreases in resting posture and relaxed face: these were the behaviors observed most often and their decrease in frequency was roughly equivalent to increases in active behaviors and alert and tense facial expressions.

The increase in aggression during introductions and its return to baseline levels may be a function of the establishment of a dominance hierarchy in the new group. In the wild, orphaned lion cubs are rarely encountered and even more rarely adopted by unrelated lions (Schaller, 1972). Aggression decreased to baseline levels after reintroduction, which also suggests that the establishment of dominance relations increased aggression to levels above those required to maintain social relations. The fact that there was an increase in aggression in the three-way introduction, but not in the pairwise introductions, also suggests that dominance structure formation in the group might be an explanation. Data were not collected on many behaviors associated with dominance structure, because in the wild young lions tend to be subordinate to all adults. For this reason, dominance structure was not expected to change at reintroduction. However, both keepers and data collectors witnessed events beginning the week following reintroduction that suggested the cub actually appeared to be dominant over the unrelated female. In future studies of this nature, behaviors such as displacement and following, and the actors and recipients of these behaviors, could be recorded to document dominance relations between animals.

The increase in affiliative behavior may be a result of the increased social opportunity inherent in living in a larger group, and may also be due to the more playful nature of cubs than adults. The greater amount of social interactions may be analogous to the interactions that occur when lions in the wild meet one another, which often involves elaborate greetings including vocalizations, tactile contact, and postural and facial

communication (Schaller, 1972). The increase in social play in the group introductions may help to form a dominance structure, and the continued occurrence of this behavior at a level higher than baseline may serve to maintain that structure. Social play in felids is a less dangerous method than aggression by which to determine which animal is stronger than another. Social play in cubs often begins as a method for determining feeding order (Leyhausen, 1979).

The lack of change in locomotion has an important implication in this study. Pacing is often studied as a behavioral index of stress in carnivores (Carlstead, 1998; Mellen, Hayes, & Shepherdson, 1998). A flaw in this study was the absence of a direct measurement of pacing. Although pacing was not measured directly, the lack of change in locomotion has some implications for pacing. In order for locomotion to remain the same, one of two things must have occurred. Either pacing did not increase, or increased pacing replaced other locomotion. The lack of a dramatic increase suggests that the introduction did not produce extreme amounts of social stress. Future research of this type should, however, include data on both behavioral and physiological measures of stress (i.e., pacing and fecal cortisol levels, as suggested in Carlstead (1998) and Brown and Wildt (1997).

There was also another flaw in the study design. While both baseline data sets were collected in the afternoon, actual reintroduction data were collected in the mornings. Schaller (1972) defines the times of peak activity for lions as before 0800 and after 1700, however, which would put all data collection sessions during inactive periods. Shepherdson and colleagues (1993), Mellen and colleagues (1998), and Carlstead (1998) have noted a prefeeding activity peak in captive felids, which could have biased the results. If this were the case, though, activity would be expected to be higher in baseline than in treatment. On the contrary, more active behaviors and postures occurred during reintroduction than in baseline. This supports the validity of the comparisons made in this investigation.

The results of this study may be useful for zoos faced with the problem of reintroducing hand-reared lion cubs. As wild females have been reported to kill unfamiliar adolescent females (Schaller, 1972), the success of this reintroduction suggests that hand-reared lion cubs should be placed back in their social group before they reach adolescence. In the future, zoos may want to use the same procedure as examined in this study in an attempt to replicate these results, or document a different procedure and compare the results of the two.

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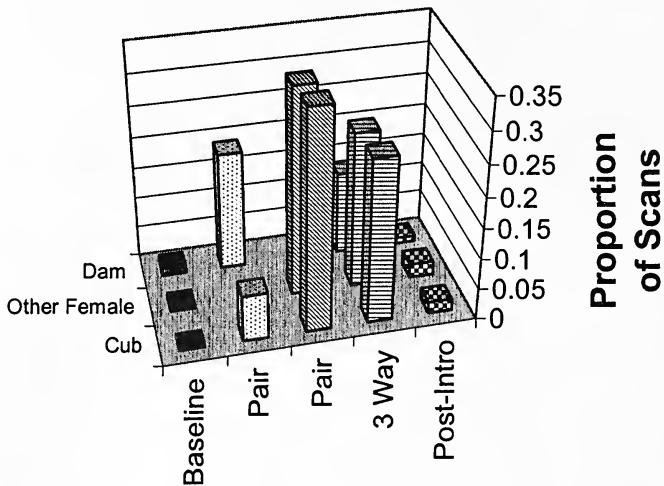


Figure 1: Tense facial expression by phase for each lion. Tense face was defined as ears twisted, eyes large, mouth partially open (Schaller, 1972). Tense face tended to be associated with watching another lion.

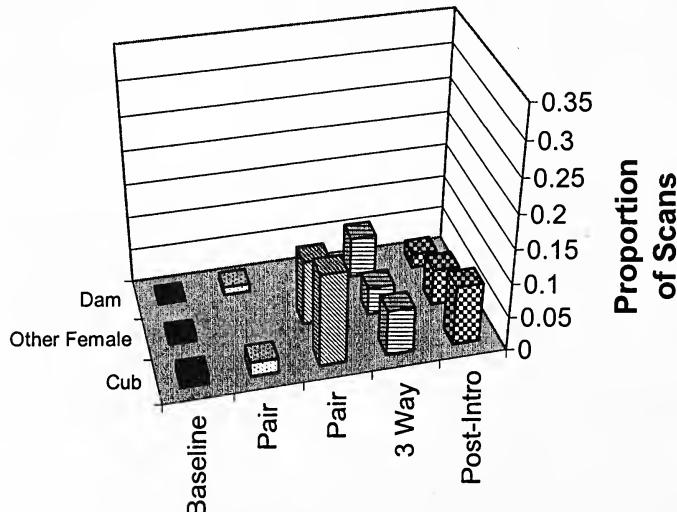


Figure 2: Social play by phase for each lion. Social play was defined as chasing, wrestling, pawing, stalking, or rushing of a cat by another (Schaller, 1972).

Announcing . . .

AAZK Enrichment Notebook

Second Edition Revised

The AAZK Enrichment Notebook, 2nd Edition, was designed to be user friendly and to provide the kind of information needed to build a comprehensive enrichment program. The AAZK Enrichment Notebook, 2nd Edition, is a tabbed, 3-inch binder with 213 pages (many of them duplexed) of enrichment information (plus an index) which includes an overview of enrichment, a resources and suppliers list, links to enrichment information, sample enrichment forms in use at various institutions, guidelines for enriching various taxa (reptiles, birds, primates, carnivores, ungulates and bats), risk assessment and safety issues, a browse plant list, a toxic plant list, cookbook recipes, an enrichment idea catalog that includes all entries from the original AAZK EnrichmentNotebook plus new submissions, and institutional contacts.

The AAZK Enrichment Committee will be working on a bibliography and a tab has been provided for this future project. A Table of Contents and Index make it easier to access the information. You may purchase the entire binder or just the notebook "guts" to update a previously purchased AAZK Enrichment Notebook. The AAZK Enrichment Notebook was designed to be a "living document" with ample space for future AAZK Enrichment Committee projects and/or other information gathered by you or your institution.

To order, fill out the form below and return with your payment to: AAZK, Inc., Enrichment Notebook, 3601 S.W. 29th St., Suite 133, Topeka, KS 66614 U.S.A. Checks and money orders should be made payable to "AAZK, Inc." (U.S. FUNDS ONLY). Allow 4-6 weeks for delivery. If using a credit card, make sure to complete all requested information on form. Prices include Domestic Book Rate Postage. Orders outside the continental United States should add \$15.00 for parcel post surface shipping. Prices are:

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Legislative Update

*Compiled by Georgann Johnston
Legislative Advisor
Sacramento, CA*



Proposal for Hunting in Kruger National Park

The Makuleke Community (MC), which is located in a portion of South Africa's Kruger National Park, has presented a proposal to allow the hunting of elephants and buffalo. The MC claims that the hunting would increase eco-tourism in their area and would provide needed money to improve that section of the park for the future.

The South African National Parks Board (SNAP) has taken the position that hunting in all national parks is strictly prohibited. However, a contractual agreement entered into between the MC and SNAP some years ago may provide for a waiver of this strict prohibition. In an attempt to work out an amicable resolution of this situation, a Joint Management Board comprised of representatives from both the MC and the Kruger Park are attempting to develop a comprehensive "Management Plan" for that section of the Park that lies within the MC's boundaries. Any activity relating to resource utilization will come from the Management Plan once it is approved by the Joint Management Board.

More information about the proposal can be obtained by contacting Dr. Salifou Siddo, Head of Corporate Affairs, South African National parks Salifous@parks-sa.co.za

Source: WildNet Africa Media Release 25 January 2000

Cambodia Opens Wildlife Sanctuary and Zoo

In an attempt to fight the rapid depletion of endangered species lost to a flourishing trade in wildlife, the Cambodian government has opened its first zoo and wildlife center. The Phnom Tamao Zoological Garden and Wildlife Rescue Centre currently houses 500 animals representing 86 different species. Of those, at least 24 of the species are critically endangered.

Animals in the collection include a number of elephants and tigers that were previously kept as pets by individuals. When they could no longer care for the animals their only choice was to sell them into the wildlife trade or release them into the wild to fend for themselves. Environmentalists in Cambodia say that there are only a few hundred elephants and less than 100 tigers remaining in the wild in Cambodia, without including the animals that have been raised in a captive environment and then released.

The zoo, which covers approximately 80 hectares, has an active captive breeding program and has recently produced a sun bear. Only last year did Cambodia sign on as a member of CITES but the country is still having problems enforcing the terms of that treaty. This problem is due, in part, to military and political officials who "look the other way" when illegal traffic in wildlife is concerned. *Source: South China Morning Post Newspaper 26 January 2000*

Wildlife in Niger Under Attack by Foreign Sport Hunters

The country of Niger, located near a number of Middle Eastern countries, is a favorite hunting ground for Arab princes who hunt ostrich, antelope and bustards among other species. The Arab princes have been accused of ignoring a 1996 ban on hunting of

endangered species and arrive in Niger with heavy-duty weapons usually reserved for use in war. Moreover, the princes refuse to allow their baggage to be inspected by Niger's governmental officials and will not allow representatives of the Department of Forests and Wildlife to accompany them on their hunts.

The Arab hunters also bring in their own falcons to use on their hunting expeditions. However, one Niger official reports that instead of 10 falcons, as permitted by law, they bring in more than 40 and continue to use them for hunting long beyond the 15 day permit period.

In addition to Niger's own laws, some of the species hunted are considered endangered or threatened under CITES (to which Niger is a signatory nation). For example, the bustard is highly endangered but the Niger Minister of Tourism still encourages Arab princes to hunt the bird with no limitation. A number of environmentalists and the "Green Party" of Niger oppose the practices carried out by the Ministry and other governmental officials but have had little effect so far in decreasing the number of animals slaughtered by the Arab visitors.

Some governmental officials say that the hunting is encouraged because it brings in much needed money for Niger's faltering economy. Environmentalists counter this statement by pointing out that very little in the way of fees are actually collected and the money that is paid by the Arab princes usually ends up in the pockets of Niger governmental officials and not in the government's coffers. The Green Party and other environmentalists are now mounting a campaign to inform and educate members of the Niger legislature regarding the problem in an attempt to bring the Ministry of Environment into line with respect to enforcing Niger's laws regarding endangered species. *Source: Arabia On Line 1 February 2000*

Elephant Poaching on the Increase Since Ivory Sale Ban Lifted

The Environmental Investigation Agency (EIA), a privately funded organization headquarters in London and Washington, D.C., reports that the incidence of elephant poaching for ivory is skyrocketing through Africa. For example, in just one national park in Kenya, 29 elephants were poached for their ivory in 1999; five times the average annual total during the previous six years. Readers may remember that at the last meeting of the Conference of Delegates to CITES, held just two years ago, a resolution was passed lifting the complete ban on the sale of ivory and allowing certain African countries to sell their "stockpiles" of tusks and horns. Unfortunately, the lifting of the ban has resulted in essentially an "open season" on live elephants for purposes of gathering even more ivory for sale to countries such as Japan.

EIA Chairman Allan Thornton, who has been tracking the illegal ivory trade since the late 1980s said, "Lifting the ivory ban was the biggest conservation blunder of the 1990s. Reports of intensifying elephant poaching are increasing. The sale of ivory to Japan was supposed to be preceded by implementation of international safeguards in the form of a monitoring system to detect increased poaching. The system was not established and now elephants are paying the price."

The parties to CITES will be meeting in Nairobi in April 2000 and the ivory issue will be high on the agenda. The governments of both Kenya and India are calling for all elephant populations to be placed on CITES Appendix I, which would prohibit all international trade in elephants or their parts.

At the same time, Zimbabwe, Namibia, Botswana and South Africa want to be able to sell their ivory. EIA takes the position that a legal ivory trade provides a cover for the black market, a view confirmed by the upsurge in both elephant poaching and illicit ivory seizures. *Source: Environmental News Service 17 January 2000*

Deforestation Increasing in Zambia

Zambia is slowly becoming barren land, the first step of turning the country into a desert. Governmental officials say that if the situation continues, Zambians will one day become "environmental refugees" searching for more fertile land. The country is losing approximately 300,000 hectares of forest cover annually, according to official estimates from the Ministry of Environment and Natural Resources. The wood is used primarily as fuel by urban dwellers.

Currently, seven million hectares of forest is under governmental control but pressure from Zambian citizens for an inexpensive fuel source is a constant threat to these woodland areas. In keeping with the deforestation, a variety of animals that reside in the forest are also being subjected to loss of sustainable habitat.

Zambian citizens, 70 percent of which live in abject poverty, depend on the sale of charcoal gleaned from the burning of trees. In fact, exportation of charcoal is a major factor in the gross national product of the country accounting for an estimated income of more than 45 million US dollars per year. Zambian scientists at the National Council for Scientific Research state that they are a long way from finding a suitable and lasting solution to the problem. In the meantime, they estimate that by the year 2020, the forests will be completely depleted. *Source: Panafrican News Agency Press Release 17 January 2000*

U. N. Foundation Pledges \$\$ for Endangered Species in Central Africa

Five national parks in war-torn Central Africa are the beneficiaries of \$2.9 million U.S. dollars pledged by the United Nations Foundation. The money will support a project of the UNESCO's Heritage Center to conserve biodiversity in regions of armed conflict.

Species that will benefit from the funds include the northern white rhino and northern savanna giraffe of Garamba National Park, the okapi of the Okapi Faunal Reserve, the mountain gorilla of Virungas National Park and Gauaer's gorilla of Kahuzi-Biega National Park. The five sites targeted by the project were chosen based on the level of continuing armed conflict in those areas.

The target species are at risk not only from the war itself but also from the influx of refugees along border areas, rebel activities, and increased poaching. Additionally, many of the staff of the parks have left their positions due to fears for their own personal safety. Now, the five parks serve as hideouts for militant groups. The United Nations believes that it is critical to provide funding to protect the animals and habitat in the five parks while the armed conflict continues. Millions of dollars already invested in the parks may be lost if continued funding is not in place, particularly because the parks have received no financial support from the Democratic Republic of the Congo since the rebellion began five years ago.

The funds will be used primarily for salary substitutes for staff and for the purchase and maintenance of field equipment to help park employees carry out their jobs. Project workers will also make an effort to provide additional staff training, enhance surveillance, monitor the status of biodiversity, and develop support programs integrating indigenous community needs and site protection. *Source: Environmental News Service 12 January 2000*

Vietnamese Government Slow to Protect Elephant Herds

Ten years ago huge groups of elephants roamed throughout Vietnam - at least 2000 nationwide by some estimates. Today, the total population is less than 100. Killing an elephant is not illegal in Vietnam (except inside a national forest) and poaching for ivory is the major reason for their decline. Government biologists have estimated that in just two years as many as 1500 elephants were killed by poachers. Shops all over the country sell ivory trinkets, jewelry and carvings.

Additionally, Vietnam's population boom has driven elephants close to extinction in that country. Their natural range has been logged or burned or turned into farmland/plantations. This problem has then been compounded by the fact that elephants are reportedly killing or injuring farmers, poachers and loggers while searching for food and salt to supplement their diet.

The government's position is that it is interested in saving the wild elephants but that there is little money to establish suitable preserves for the animals. Containment is costly and practically impossible and the government has not shown much interest in relocation of animals since a botched 1993 effort when a so-called expert from Singapore was trampled to death while trying to shoot one of the elephants with a tranquilizer gun. However, the Vietnamese Prime Minister has expressed a concern for the ongoing problem and is under some pressure from various environmental groups inside and outside Vietnam who have sent letters and e-mail message demanding that a suitable preserve for the elephants be created. *Source: San Jose Mercury News 26 December 1999*

Catamounts Spotted In Massachusetts

The Associated Press reported in mid-January that "dozens of residents" in Berkshire County, MA have seen catamounts, an eastern subspecies of mountain lion, "thought to be extinct" by state wildlife officials. The officials continue to maintain the sightings are "inaccurate" or mountain lions "escaped from captivity," because the species is endangered in the eastern U.S. and recognizing their existence would require protection and recovery efforts. The MA Environmental Police, however, "believe there are truth to the stories," since "ecological conditions are nearly ideal for a return of the catamount to the Berkshires." *Source: GREENlines issue #1053 1/25/2000*

You Know You're a Keeper
When.... you can clean up more with a bad rake than the average person can with a good broom...your child's first term paper at school describes the benefits of a mud wallow along with a demonstration...your doorbell has gibbon ape calls rather than chimes...you can patch a hose in a minute flat and make a useless one last for years...All vacations are planned around visits to other zoos...
this month's installment courtesy of Jim Bousquet, San Marcos, TX

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Enrichment graphics will be a featured article throughout the year to encourage the sharing of ideas in the quest to inform visitors of enrichment practices. **Please note that photo submission guidelines have changed!** As long as the photograph (color or black and white) or computer printout can be scanned clearly, it will be accepted. Please let this encourage you to send in all sorts of enrichment photos with your ideas. *Eds.*

We decided to create an enrichment poster as a way to better utilize some unused display space in our feline building. As keepers in the building, we frequently receive questions from the public regarding what we do to keep our cats from "getting bored". In an attempt to answer these questions, we post our zoo's enrichment sign in front of any exhibit with an enrichment activity. We still felt that we needed an additional method to call attention to our efforts, hoping to educate the public about the programs we work so hard to provide for our animals.

A poster seemed to be our best option. It would allow us to utilize the many photographs I had taken of our cats and their enrichment experiences. We wrote a brief explanation of "What is enrichment?" and "Why do we do it?" and chose the most entertaining photos along with a short caption for each one. With a little modification, our hardworking graphics department produced a poster that was just what we had in mind.

Much to our biased delight, we feel it is one of the most read graphics in the zoo. As it is posted near our office, we get the pleasure of seeing the public read it throughout the day. Spurred on by our success, we are planning several successive posters that will display enrichment throughout the zoo. These will include the goals and successes of our enrichment programs, and encourage our patrons to be on the look-out for enrichment activities throughout the zoo. We have even begun talking with our marketing department about using a section of next years' zoo map to encourage our visitors to be more aware of these activities on their visit.

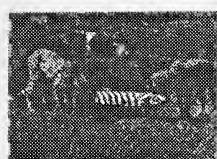
As keepers in the business of providing the best care possible for our animals, we share the goals of an active enrichment program. We hope that these efforts will give a better understanding of enrichment to our patrons, and that their visit to our zoo will be all the more enjoyable because of it.

—Lani Sutherland, Feline Keeper
Utah's Hogle Zoo, Salt Lake City, UT

Animal Enrichment Program

WHAT IS ENRICHMENT?

Enrichment is a term used to describe various activities that keepers utilize to encourage natural behavior from the animals under their care.



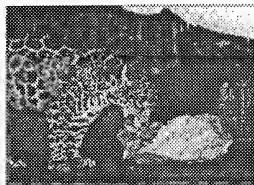
Our male cheetahs also received a paper maché zebra, and searched it thoroughly for meat inside.



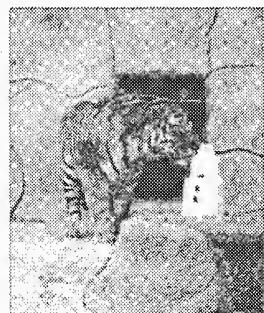
An emptied syrup barrel, donated by Coca-Cola Corp., becomes a pool toy for the Siberian Tiger.



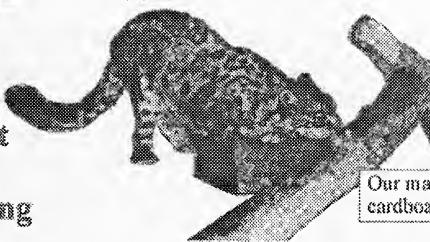
The lioness drags a paper maché zebra across the yard during our Enrichment Day Celebration.



Our female jaguars take turns shredding a paper bag with straw and scents.



A snowman with a smile made out of blood popsicles is a springtime treat for the Siberian Tiger.



Our male snow leopard investigates a cardboard box scented with allspice.

Enrichment in the Feline Building

Photos by Lani Sutherland and Jay Weston

(Ideas appearing in this column have not necessarily been tested by the editors for safety considerations. Always think ahead and use good judgement when trying new ideas. Eds.)

You are invited to submit material for the Enrichment Options Column. This might include recipes, toys, puzzle feeders, olfactory enrichment ideas, etc. Drawings and photos of enrichments are encouraged. Send to: AKF/Enrichment Options, 3601 S.W. 29th St., Suite 133, Topeka, KS 66614.

Visit the new AAZK Enrichment Website - www.enrich.org/aazk or to join the Enrichment Listserve by e-mail jackbell@humboldt1.com
An archive of past postings can be viewed at www.caza.org/enrich.

Now Available . . .

Resources for Crisis Management in Zoos and Other Animal Care Facilities

AAZK, Inc. is pleased to announce the availability of its newest publication - *Resources for Crisis Management in Zoos and Other Animal Care Facilities*. This reference work is an anthology of articles by authors from zoo keepers to veterinarians to zoo directors to public relations specialists. The works of 56 authors from these diverse zoological perspectives brings together information and resources for planning a crisis management program for your facility or for augmenting an existing program. The 424-page volume includes a foreword by Sydney J. Butler, Executive Director of the American Zoo and Aquarium Association.

The book's chapters are arranged by the following subject topics: Factors That Influence Crisis Management in a Zoological Setting; Developing An Emergency Preparedness Plan; Emergency Response and Crisis Management Teams; Public Relations and the Crisis Situation; Animal Restraint and Animal Identification Techniques; Dealing with A Crisis Situation (Zoological Crisis, Natural Disasters, and Manmade Disasters); Injury and Death at the Zoo; and Taxon-Specific Crisis Management Protocols. This important work also includes an extensive Appendix and a listing of suppliers and equipment vendors. AAZK has gathered the best of existing articles on crisis management and expanded the text with originally solicited materials on Zoonotic Disease: Risk Appreciation and Biosafety, Meteorological Aspects of Disaster Planning, The Weapons Response to a Zoological Crisis Situation, The Process of Exhibit Design and Construction: How It Affects Crisis Management, etc. The book includes the results of the first-ever North American Crisis Management Survey as well as Case Studies showing how zoos reacted in various crisis situations and what was learned from their experiences. A must for every zoo professional!

To order fill out the form below and return with your payment to: AAZK, Inc., CMR, 3601 S.W. 29th St., Suite 133, Topeka, KS 66614 U.S.A. Checks and money orders should be made payable to: "AAZK, Inc." (U.S. FUNDS ONLY). If using a credit card, make sure to complete all requested information on form. Prices are: AAZK Members \$45.00 Non Members \$60.00. Prices include domestic Book Rate Postage. Orders outside the continental U. S. should add \$10.00 for parcel post surface shipping.

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*Institutions wishing to advertise employment opportunities are asked to send pertinent data by the **10th of each month** to: Opportunity Knocks/AKF, 3601 S.W. 29th St., Suite 133, Topeka, KS 66614. Please include closing date for positions available and when setting these dates keep in mind that because of bulk-mail, most readers do not receive the AKF until the middle of the month or later. There is no charge for this service and fax listings of positions which become available close to deadline are accepted. Our fax is (785) 273-1980. Please Note NEW ADDRESS for AAZK !*

ZOOLOGICAL REGISTRAR...Lion Country Safari is seeking a full-time registrar. The successful candidate will be responsible for maintaining health and inventory records for the entire collection, as well as preparing animal shipment documentation. He/she will report daily to the Curator of Wildlife, and may be required to perform keeper duties. Qualifications: college/university degree in the biological sciences is preferred, or a minimum of two (2) years paid experience in a recognized zoological facility. Must be proficient in computer use and possess good typing skills. Familiarity with ISIS software (ARKS, medARKS, etc.) is an asset. Must possess good communication and organizational skills. Full range of benefits is offered along with a salary commensurate with experience. Please send resumé, along with two (2) work references to: Ron Cameron, Wildlife Manager, Lion Country Safari, Inc., 2003 Lion Country Safari Road, Loxahatchee, FL 33470.

The following two (2) positions are available at the Dallas Zoo, Dallas, TX. Responsibilities for these positions may consist of feeding, cleaning, behavioral observation; assisting in zoo research and veterinary procedures; restraint techniques; quarantine and sanitation procedures; record keeping and pest control. Positions may be in the mammal, bird, Children's Zoo, and veterinary or night departments. Interested individuals must submit an application/resumé by 7 April 2000 to: City of Dallas, Dept. of Human Resources, 1500 Marilla, Suite 6AN, Dallas, TX 75201; Fax (214) 670-3764.

ZOO ANIMAL KEEPER...qualified applicants must have High School education or equivalent. Must have the ability to follow oral/written instructions and communicate effectively. Salary \$10.00 per hour.

ZOO SENIOR ANIMAL KEEPER...qualified applicants must have High School education or equivalent and three (3) years experience with animal care. Additional education and experience are strongly recommended. Salary is \$10.21 per hour.

The following two (2) positions are available at the Birmingham Zoo. To apply send a letter and resumé by 31 March 2000 to: Marcia Riedmiller, Curator of Mammals, Birmingham Zoo, Inc., 2630 Cahaba Rd., Birmingham, AL 35223. E-Mail:mrriedmiller@birminghamzoo.com< EOE

SENIOR KEEPER/PRIMATES...working supervisory position responsible for daily care and maintenance of a diverse collection of primates and supervision of keeper staff. Strong leadership and communication skills a must. Requires high school diploma, degree in animal related field. Supervisory experience preferred. Competitive salary and benefits.

KEEPERS...seeking keepers to work with Primates and Pachyderms - protected contact. Positions available for team-oriented individuals with at least one (1) year experience. Experience with training and enrichment a plus. Competitive salary and benefits.

SEABIRD DEPT. INTERNSHIP...the Alaska SeaLife Center in Seward, AK, an aquarium dedicated to marine research, rehabilitation and public education, is accepting resumés for internship opportunities in avian husbandry. This full-time position, lasting three to five months, will be shared between the aviculture and education departments. This position will introduce basic animal care, husbandry skills, and rehabilitation experience in research-oriented setting; principal duties would include assisting in the daily care and maintenance of the Center's seabird collection; daily animal diet prep, routine cleaning of bird exhibits, kitchen and work areas; monitoring systems conditions and water quality; maintaining written and computer records, assisting staff with research and rehab; participating in public

educational talks. This is a volunteer position consisting of 20-30 hours per week in avian husbandry with the remaining 10-20 hours in education and requires a minimum commitment of three months. Course work in the fields of marine or ocean sciences, psychology, or other related animal fields is desirable. Some background and a genuine interest in ornithology is preferred. Must be flexible and be able to take and understand written and oral instructions; have effective verbal and written communication skills. Should have good balance in order to maneuver around exhibits and holding areas and able to lift 50 lbs. Public speaking skills are highly encouraged. Although this is an unpaid position, ASLC may provide housing and other support for a limited number of applicants. Interns are responsible for all living and travel expenses unless otherwise specified. For more information, contact Linda-Rue Olsen, Visitor and Interpretive Services Manager, by e-mail at: lindao@alaskasealife.org, or by phone at 1-800-224-2525, ext. 343.

ZOO KEEPER..Immediate Opening. Private, non-profit otter conservation facility for breeding and study programs, seeking dedicated individual for permanent position. Requires one (1) year experience with exotic animals - experience with mustelids preferred. Responsible for daily husbandry, maintenance of animals and grounds enclosures, diet preparation, and record keeping. Experience with animal restraint and blood drawing preferred. Must be physically strong (able to lift 50 lbs.) and work independently. 40-hour work week including some weekends and holidays. Benefits included. Send letter and resumé to: Otter Conservation Center, Inc., 250 Otter Conservation Rd., Statesboro, GA 30458. Resumés may be faxed to (912) 839-2551.

ZOO KEEPER...the City of Gainesville is accepting applications for a zoo keeper position at the Frank Buck Zoo. Position is for regular, full-time. Requires Associate or Technical Degree in the Sciences, Biology, Veterinary Medicine or Wildlife Management and two (2) years of increasingly responsible paid experience in exotic animal husbandry. Should have knowledge of animal behavior and feeding habits. Regularly required to lift and/or move up to 50 lbs. and occasionally lift and/or move more than 100 lbs. Regularly works in outside weather conditions. Submit application or resumé to City of Gainesville, Department of Human Resources, 200 S. Rusk St., Gainesville, TX 76240 **no later than 5 p.m., Friday, 31 March 2000**.

ZOOKEEPER...this is a full-time permanent position caring for a diverse collection of exotics and several domesticated species, emphasizing on birds. Involves daily husbandry, diet preparation, exhibit maintenance, assisting with the being involved with various veterinary procedures, and an opportunity to work with children and young adults in our zoo-crew program, and Science Focused High School here at the zoo. Experience in behavioral enrichment and operant conditioning techniques a plus. Smoke-free zoo. \$7.02/hr. to start. Health, dental, sick time, vacation time. Send letter, resumé and references to: Randy Scheer, Folsom Children's Zoo and Botanical Garden, 1222 S. 27th St., Lincoln, NE 685602. AZA accredited. 14 acres. Six full-time zoo keepers. **Position open until filled.**

ANIMAL KEEPER GUIDES...several positions available for seasonal employment May through Oct. Requires high school diploma, paid zoo experience preferred, but volunteer experience acceptable. Good opportunity to gain paid zoo experience. Applicants must have strong, audible voices, neat appearance, good personality, and must work well with co-workers as well as the public. Non smokers preferred. Duties include daily animal care and feeding, exhibit cleaning and maintenance, various other maintenance duties, and talking to groups in a tour situation. Must lecture on both venomous and non-venomous reptiles. Must have experience in handling non-venomous reptiles or a willingness to learn. Salary \$195.00 per week. Living quarters, utilities and uniforms furnished. No pets allowed. Send resume to Jim Miller, Soco Gardens Zoo, c/o 89 Evans Cove Rd., Maggie Valley, NC 28751. Filing deadline **25 April 2000**.

ZOO KEEPER..Immediate Opening. Private, non-profit otter conservation facility for breeding and study programs, seeking dedicated individual for permanent position. Requires one (1) year experience with exotic animals - experience with mustelids preferred. Responsible for daily husbandry, maintenance of animals and grounds enclosures, diet preparation, and record keeping. Experience with animal restraint and blood drawing preferred. Must be physically strong (able to lift 50 lbs.) and work independently. 40-hour work week including some

weekends and holidays. Benefits included. Send letter and resumé to: Otter Conservation Center, Inc., 250 Otter Conservation Rd., Statesboro, GA 30458. Resumés may be faxed to (912) 839-2551.

ANIMAL KEEPER...the Arizona-Sonora Desert Museum is developing a roster of qualified candidates to fill animal positions in the Department of Mammalogy and Ornithology. We expect to fill several full-time and part-time positions over the next year. Qualified applicants should have experience in animal care and the ability to work in a team environment. A college degree in biology or related field is preferred. Please send letter of interest and resumé to: Human Resources, Arizona-Sonora Desert Museum, 2021 N. Kinney Road, Tucson, AZ 85743; e-mail to: mbundy@desertmuseum.org; or fax to (520) 883-2500. EOE.

INTERNSHIPS...the SeaWorld Orlando Education Department has two unique Internship opportunities for college students. The Camp SeaWorld/Adventure Camp Internship provides an opportunity for students to work with SeaWorld's summer camp programs and is offered from May to August. The new Educator Internship which gives students the opportunity to staff various animal attractions and interact with park guests, is offered as a twelve-week Internship during the Spring, Summer and Fall semesters. Contact Jeannie.Thompson@anheuser-busch.com for information on the Camp SeaWorld Internship. Contact Geni.Garza@anheuser-busch.com for information about the Educator Internship. Check out <http://www.seaworld.org> for more information about either internship.

AVICULTURE INTERN...will receive intensive, hands-on training in the care and maintenance of a large bird collection. Will experience all aspects of bird husbandry including general cleaning, handling, incubation, record keeping, public education, etc. Seeking college students or recent graduates with an interest in avian management biology. Interns will work with the aviculturists for a three-month period. This is a volunteer position with on-site housing provided. Internships available year-round. Send a letter and resumé with references to: Tracy Aviary, 589 East 1300 South, Salt Lake City, UT 84105. ATTN: Kristine McCue/Holly Seitz.

INTERNSHIP...The Audubon Institute is offering a hands-on internship at the Species Survival Center. Interns will receive training in the care of endangered species such as antelope, birds and cats. Interns will participate in all aspects of animal maintenance and care; including the incubation and rearing of chicks, exhibit maintenance, animal enrichment program and general cleaning. Special opportunities exist to participate occasionally in laboratory and veterinary procedures. Seeking college students or graduates for a minimum of 10 weeks time. This is a voluntary internship position. Some on-site housing is available. Internships are given year-round. Transportation is necessary. For an application and more information, please contact Jackie Conlon, Audubon Center for Research of Endangered Species, 14001 River Road, New Orleans, LA 70131; phone (504) 398-3166; Fax (504) 398-3100; e-mail: lab@acres.org<

The following four (4) positions are open at Zoo Atlanta. Send resumés to: Zoo Atlanta, Gail D. Allen, Human Resources, 800 Cherokee Ave. SE, Atlanta, GA 30315 or fax to (404) 624-5943.

COMMISSARY ASSISTANT MANAGER...to assist with management of daily operation of the commissary, including staff, volunteers, diet preparation, inventory, and diet delivery. Working position which will also work with technicians in all aspects of the daily operation. Will assist with records and record keeping as assigned by Commissary Manager. Supervises and coordinates the daily operations of the animal diet kitchen. Assists staff with all aspects of diet preparation and delivery. Requires a degree in Dietetics, Nutrition, Animal Science or Biology with course work in nutrition. Must have three to five (3-5) years supervisory experience and three (3) years experience in an animal diet kitchen or other food preparation operation. Proficiency with Windows, Microsoft Word and Excel a plus.

COMMISSARY TECH/CULTIVATE BAMBOO...primary purpose is to harvest and cultivate bamboo on locally identified sites for the purpose of animal food. Assist with the development of a local harvesting program, including site evaluations, species identification, sampling for nutritional analysis and contaminants, and other related areas as necessary. Requires

experience/knowledge of horticultural or agricultural cultivation techniques. Knowledge of and experience with bamboo highly desirable. Requires a high school diploma or equivalent. Must be able to obtain a valid Georgia driver's license and have a good driving record. Must be able to repeatedly lift and/or push 50 lbs.

ANIMAL HUSBANDRY SUPERVISOR...responsible for the care, management, and some training of animals used in education programs. Cross training of other education programs will be a necessary component. This person will also participate in the training of all staff, docent and volunteer animal handling of zoo animal related education programs. Position requires background and knowledge of animal care, management and training, strong communication skills, excellent problem solving techniques. Knowledge of informal education programs as well as team work strategies are also strongly encouraged. Requires a four-year degree in biology, psychology or related field. Minimum two (2) years experience in animal husbandry and training.

ELEPHANT/CARNIVORE KEEPER...responsible for the care of the animals in the section and their habitats. The keeper will participate in the care of the collection including training/management in a free-contact elephant program. Observes and monitors health, behavior and communicates changes to supervisor. Maintains exhibits and holding areas. Requires four-year degree in biology, psychology, zoology, or related field (sufficient relevant experience will be considered in partial fulfillment of education requirement). Previous zoo experience, elephant handling/training skills a plus. Must have knowledge of animal behavior and diets and ability to recognize abnormalities in animal health/behavior.

RELIEF KEEPR/Pittsburgh Zoo...requires good communication/organizational skills and ability to work well with others in a team environment. Associate or four-year degree in biology/zoology/related field preferred or equivalent experience. Prefer one (1) year's work experience with AZA-accredited zoo mammal collection working with large cats, carnivores and primates. A working knowledge of operant conditioning preferred. Must obtain a valid PA driver's license and a negative TB test. Responsible for providing animal care and well being, monitoring animal health, maintaining cleanliness of animal areas, animal behavior conditioning and enrichment, diet preparation, and exhibit modification. Will make formal and informal presentations. Requires heavy lifting up to 80 lbs., repetitive movement, bending, lifting, walking and standing extended periods of time. Must be able to work all shifts, weekends, holidays, outside in all weather conditions. Please contact: The Pittsburgh Zoo, Human Resources Dept., One Wild Place, Pittsburgh, PA 15206. **Closing date is 25 March 2000.**

AVICULTURIST...Tracy Aviary seeks a highly motivated, self-starting aviculturist to join our growing team. BS in Biology/related field preferred and at least one (1) year's experience working with birds in a zoological facility. Will be involved in all aspects of avian husbandry for a large and diverse collection including cleaning, diet preparation, exhibit maintenance, record keeping, enrichment, public interaction, and medicating. Salary \$18,000.00 plus excellent benefits. Send cover letter and resumé to: Nigella Hillgarth, Tracy Aviary, 589 East 1300 South, Salt Lake City, UT 84105.

KEEPER INTERNSHIP...a ten-week internship is available this summer for applicants 18 and older. Preference given to those pursuing a degree in biology or wildlife sciences. Will assist in all areas of animal management and zoo maintenance. Internship begins in June 2000; stipend \$1,000.00. Please send letter/resumé by **15 April, 2000** to: Salisbury Zoo: summer intern, P.O. Box 2979, Salisbury, MD 21802-2979. For more information, call (410) 548-3188.

*Check AZA Member Institution job position listings
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of Zoo Keepers, Inc.**

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**Topeka, KS 66614
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ANIMAL KEEPERS' FORUM



**The Journal of the American
Association of Zoo Keepers, Inc.**

April 2000

Managing Editor: Susan D. Chan • **Associate Editors/Enrichment Options**

Coordinators: Gretchen Ziegler, Sequoia Park Zoo & Jan Roletto, Utah's Hogle Zoo • **Legislative Outlook**

Column Coordinator: Georgann B. Johnston, Sacramento, CA • **ABC's Column Coordinator:** Diana Guerrero, San Diego, CA • **Reactions Column Coordinator:** William K. Baker, Jr., Frank Buck Zoo, Gainesville, TX

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Biological Values for Selected Mammals, 3rd Edition - Jan Reed-Smith, John Ball Zoo



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About the Cover.....

*This month's cover features "Alano" a male Mexican wolf (*Canis lupus baileyi*) or Wild Lobo, at the Belle Isle Zoo, Detroit, MI. Alano is on loan from USFW, and is a part of the Species Survival Plan (SSP) for Mexican wolves. His chosen mate is from Cheyenne Mountain Zoological Park, Colorado Springs, CO. The two were introduced for the first time in February, but will not be ready to breed until next year. After a 63-day gestation period, the genetically valuable pups will continue the process, once sexually mature at two years, and weighing between 60-80 lbs (27-36kg). Prior to population decreases, the Mexican wolves provided ecological balance in their territories throughout Mexico and north into Arizona. Deer, elk, rabbits and javalina fell prey to the masterful packs, and in effect opened niches for the survival of hawks, badgers, and pine martens. In an effort to increase wild populations, certain captive-born SSP wolves will gradually be reintroduced into the wild in Arizona or New Mexico. This month's artist is Tarah Duditch, a carnivore keeper at Belle Isle Zoo. Thanks, Tarah!*

Animal Keepers' Forum publishes original papers and news items of interest to the animal keeping profession. Non-members are welcome to submit articles for consideration. Articles should be typed or hand-printed and double-spaced. Authors are encouraged to submit their manuscripts on a disk as well as in hard copy form. Acceptable formats include: for Macintosh users - Microsoft Word or Works; IBM users - Word for Windows, WordPerfect or Wordstar. All illustrations, graphs, charts and tables should be clearly marked, in final form and should fit in a page size **no greater than 5.5" x 8.5"** (14cm x 22cm). Literature used should be cited in the text (Brown, 1986) and alphabetically in the final bibliography. Avoid footnotes. Include scientific name (as per ISIS) the first time an animal name is used. Thereafter use common name. Use metric system for weights and measurements (standard equivalents may be noted in parenthesis). Use the continental dating system (day-month-year). Times should be listed as per the 24-hour clock (0800, 1630 hrs. etc.). Glossy black and white or color prints (minimum size 3" x 5" [8cm x 14cm]) are accepted. Clearly marked captions should accompany photos. Please list photo credit on back of photo.

Articles sent to **Animal Keepers' Forum** will be reviewed by the editorial staff for publication. Articles of a research or technical nature will be submitted to one or more of the zoo professionals who serve as referees for **AKF**. No commitment is made to the author, but an effort will be made to publish articles as soon as possible. Lengthy articles may be separated into monthly installments at the discretion of the editor. The editor reserves the right to edit material without consultation unless approval is requested in writing by the author. Materials submitted will not be returned unless accompanied by a stamped, self-addressed, appropriately-sized envelope. Telephone and FAX contributions of late-breaking news or last-minute insertions are accepted as space allows. However, long articles must be sent by U.S. mail. Phone 1-800-242-4519 (US); 1-800-468-1966 (Canada); FAX (785) 273-1980.

Deadline for each regular issue is the 10th of the preceding month.
Dedicated issues may have separate deadline dates
and will be noted by the editor.

Articles printed do not necessarily reflect the opinions of the **AKF** staff or the American Association of Zoo Keepers, Inc. Publication does not indicate endorsement by the Association.

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Scoops & Scuttlebutt

Chapters Continue Support for AAZK, Inc.

The AAZK Board of Directors and the Administrative Office staff would like to thank the following AAZK Chapters for their recent donations in support of the Association and its programs and projects:



We gratefully acknowledge the generous support of these Chapters in helping the Association carry out its mission: Puget Sound Chapter (Seattle, WA) \$2000.00 designated for the AAZK Endowment Fund; Audubon Institute Chapter of AAZK (New Orleans, LA) \$1000.00 to be split between the AAZK Endowment Fund and the general operating budget; Knoxville Zoo AAZK Chapter (Knoxville, TN) \$500.00 for the AAZK Endowment Fund; San Diego AAZK Chapter (San Diego, CA) \$400.00 for the AAZK Endowment Fund; South Florida AAZK Chapter (Miami, FL) \$225.00 for the general operating budget; Virginia Chapter (Norfolk, VA) \$200.00 split between the general operating budget and the Conservation, Preservation and Restoration Grant Fund (CPR); El Paso del Norte (El Paso, TX) \$200.00 for the general operating budget and \$100.00 for production costs of the Enrichment Notebook; Los Angeles AAZK Chapter (Los Angeles, CA) \$200.00 for the general operating budget; Greater Kansas City AAZK Chapter (Kansas City, MO) \$54.20 for the AAZK Endowment Fund; San Antonio Chapter (San Antonio, TX) \$25.00 for the AAZK Endowment Fund.

Two Corrections of Note

Please note the following two corrections for errors published in the March 2000 issue of *Animal Keepers' Forum*:

1. On Page 115 under the First Call for Papers for the 2000 National AAZK Conference in Columbus, the e-mail address for National Program Conference Chair Jeff Phillips was incorrectly listed. The correct address is: jeff_phillips@worldnet.att.net
2. On Pages 129-130 under Otter Interest Group Plans Meeting, the photographs were incorrectly identified. The single otter pictured on page 129 is actually an adult North American river otter and the small otters pictured on page 130 are also North American river otters. The wrong captions were inadvertently sent with the photos when submitted to *AKF*.

New Animal Management Training Program Announced

The Jefferson Community College in Watertown, NY announces the newly accredited Associate of Applied Science degree in Animal Management. This degree program is designed to prepare students for employment in a variety of animal health and welfare settings, including zoological parks, veterinary facilities and animal parks. The program provides students with hands-on experience in animal management through clinicals each semester and internships at the Thompson Park Conservancy and/or area animal care facilities. Thompson Park is a 32-acre zoo which houses 160 specimens representing 97 species and offers exhibits that feature the natural history of New York State and highlight the unique adaptations of native species. The program also provides coursework that focuses on animal behavior and care, terminology, biology and nutrition. Additional general education courses compliment the program. Clinical rotations are provided in Carnivores, Hoofstock, Expansion, Clinic, Education Animals, Commissary, Quarantine, Discovery Center, Domestics and Avian.

For further information contact: Peter N. Gaskin, Professor of Biology or Monica G.

LeClerc, Assistant Professor of Biology, at Laboratory Sciences Department, Jefferson Community College, 1220 Coffeen St., Watertown, NY 13601 or call (315)786-2320. For application and admissions information contact the Admissions Office at (315) 786-2277 or check the website at www.sunyjefferson.edu.

Animal Trainers' Network Workshop

The Cincinnati Zoo and Botanical Garden will host the Animal Trainers' Network Workshop which is scheduled for 11-13 June, 2000. Full registration for the conference is \$25.00 which includes seven meals. After 21 May, registration fee is \$30.00. Day rate registrations are \$10.00 for 11 June, \$15.00 for 12 June, and 13 June is free. The program will include speaker meetings, a tour of the zoo, small open floor discussion groups divided by taxon groups, workshops in basics of training and a bar-b-que and silent auction at the zoo. There will be FREE housing in the Manatee Springs Building where there is carpeted floor space for 75 people (sleeping bag required). Showers are available. There is also limited housing available with area keepers on a first-come, first served basis. Their new elephant facility, Vanishing Giants, will be open in time for the workshop. This building houses eight Asian elephants, three Masai giraffe and five Okapi. For further information contact: Linda Kelly, Vicki Ulrich, Butch or Valerie Haft (513) 281-4700 ext. 8356; Dawn Strasser (513) 281-4700 ext. 7710; Jenny Kroll (513) 281-4700 ext. 7712 (e-mail: jenny.kroll@cincyzoo.org or hospital@cincyzoo.org)

Message From the President

Dear Membership:

The mid-year Board of Directors meeting was held in Topeka in early April. At the time of this writing it is over one month away, but by the time you receive and read this it will probably be over and the BOD once again will be back at our respective zoos. We will have been able to visit our new offices and will have utilized the meeting space available at the new AO.

During this meeting we discussed the new AAZK Endowment Fund and how the money that we are able to raise will be invested. When we have adopted a policy for this investment we will make it available to all Chapters and members. I would like to thank all the Chapters that have graciously donated to this fund and also thank all Chapters that choose to do so in the future. A donation to this fund is an investment in AAZK's future.

I hope by now you all have had the opportunity to view the new and improved AAZK web site and I hope you choose to utilize the different pages now available to you. Please do not forget the AAZK Enrichment web site. There is always something new and exciting there. Another exciting opportunity for AAZK membership this year is the trip to Africa. If this proves to be a popular endeavor we may be able to make other trips available in the future to additional countries with a itinerary geared toward zoo keepers.

Please remember that the Board of Directors is here to serve the membership and I hope you will not hesitate to contact any of us with your questions or concerns.



Scott M. Wright, President

Coming Events

Bear Essentials 2000 - Bear Care for the Next Millennium

An Animal Care Workshop on Husbandry, Training & Enrichment. May 7 & 8, 2000 at Toledo Zoo, Toledo, OH. Goals of the workshop will be to identify the problems we face as captive managers of bear species and develop and share fresh ideas in husbandry, training and enrichment. Workshop will: Outline the present status of bears in the wild and recent conservation issues; Recognize the new trends in captive bear management; Identify behavioral needs of bears in captivity; Identify ways to improve husbandry; and Identify current information available on bear husbandry. Those wishing to present papers must submit abstracts by **20 April 2000**. Abstracts should be limited to one or two paragraphs, should describe in details the significance of the presentation topic, briefly list results, conclusions or benefits of the work described. Abstracts should be submitted to: D. Weinhardt (beartagsow@aol.com), Houston Zoo, 1513 N MacGregor Dr., Houston, TX 77030. This year the Bear TAG is offering two \$250 awards for best papers by a keeper to help cover expenses of attending the workshop. Check for further information on the Bear TAG website at www.bearden.org. To join the bear listserve, contact Diana Weinhardt at the e-mail address given above.

"Genetic Resources for the New Century"

- May 8-12, 2000 Hosted by Zoological Society of San Diego. For more information, contact conference organizers, Oliver Ryder, Ph.D., e-mail: oryder@ucsd.edu or Kurt Benirschke, M.D., e-mail: kbenirs@ucsd.edu

The Apes: Challenges for the 21st Century

- May 10-14, 2000 in Chicago, IL. Hosted by The Chicago Zoological Society (Brookfield Zoo). A unique conference focusing on the apes of the world. It is hoped to bring together researchers, zoo personnel and field biologists from all over the world. For information contact: Brookfield Zoo Ape Conference Planning Committee at (708) 485-0263 ext. 604; Fax (708) 485-3140, or you may receive information via e-mail at: APECON@BROOKFIELDZOO.org

Fifth International Elephant Research Symposium (June 2-3) and the Second North American Conference on Elephant Foot Care and Pathology (June 4)

Hosted by Oregon Zoo
For further information contact: Norie Dimeo-Ediger at (503) 220-5763, by fax at (503) 226-0074, or by e-mail: edigern@metro.dst.or.us<

Animal Behavior Society Annual Meeting

August 5-9, 2000 in Atlanta, GA, co-hosted by



Morehouse College and Zoo Atlanta. Along with contributed talks and posters, the meetings will include special symposia on "Dispersal Behavior" and invited papers on "Comparison Between Primates and Cetaceans". Plenary speakers include Chris Boake, Hugh Drummond and Dee Boersma. For further info see: <http://www.animalbehavior.org/ABS/Program/>

American Association of Zoo Veterinarians

- Sept. 17-21, 2000 in New Orleans, LA, in conjunction with the International Association of Aquatic Animal Medicine. For additional information, please contact Wilbur Armand, VMD, Executive Director/AAZV, 6 North Pennell Rd., Media, PA 19063; Phone - (610) 892-4812; Fax - (610) 892-4813; e-mail - 75634.235@compuserve.com<

Carnivores 2000: A Conference on Predator Biology and Conservation in the 21st Century - November 12-15, 2000. Hosted by the Defenders of Wildlife at the Omni Interlocken Hotel in Denver, CO. For more information contact: Carnivores 2000, Defenders of Wildlife, 1101 14th St., NW, Washington, DC 20005 or call (202) 789-2844 ext. 315 or e-mail: nfascione@defenders.org<

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ABC'S

Animal Behavior Concerns & Solutions

A Question and Answer Forum for the Zoo Professional

By Diana Guerrero, Independent Behavior Consultant,
Ark Animals of California, San Diego, CA

Question

American Zoo. Can you discuss the training term, "deprivation"?

Answer

Part 2 of 2

(See AKF Vol.27(3) for Part 1)

Last month we looked at several definitions of deprivation and you were given a bunch of questions for discussion and consideration. Here we will take a closer look.

Dietary, Social & Environmental Deprivation or Controlled Management?

You probably noticed that the questions posed last month caused some conflict in your definition of deprivation or in your thought processes regarding the word. That was the idea. Nothing in training is black and white. It is a science, but it is also an art. Your intuitive sense often takes you further than your knowledge of theory. This month we are going to look at the topic a bit closer and discuss a few more points. I am going to focus more on the dietary deprivation angle since that is what most people think of when they hear the term "deprivation."

Continued Discussion

As long as the animal maintains condition (body weight, coat condition, etc.) then slight variations of feeding schedules are valid, useful, safe, and ethical. If you are working at making conditions optimal for an animal and the management of it, most would not consider the withholding a reinforcement a few times per day to be a breach of ethics or humane management practices.

Variable reinforcement in quantity, type and using selectivity in criteria enhance the training situation. Most would not consider it to fall under the topic of deprivation, although it could. The withholding of an item could be done through any daily activities, not just shows or just during daily management training sessions.

Dietary deprivation used incorrectly rather than increasing a food drive will result in an escalated hunger drive. This often contributes to a distractibility, nervousness, irritability, or even stereotypic behavior. This can also escalate aggression toward the trainer and between animals. However there are some applications where this is part of a program to extinguish such behavior.

In highly aggressive dogs, for instance, these techniques are used frequently as an effort to address the situation and to avoid euthanasia. This means they are pulled off of food and water so that it is controlled or managed (deprived). If aggression is shown upon attempts to administer these dietary needs, a time out is given and the animal is not rewarded for the aggression. These animals are also socially deprived. They are kept confined so that their only contact and reinforcement come from the person working with them.

Some people are not familiar with how to monitor their animal for optimum weight, or how to properly assess the diet. Take a bird as an example, if the bird is given a lot of food but doesn't eat it all he is not in a controlled circumstance or in a good dietary management program. By monitoring the quantity along with the quality of the diet he would consume all of his food and get all of the nutrients AND maintain a consistent weight. If you were to also train the bird he would have more motivation to work using food reward. You could use additional treats or the established diet. However, some would consider this animal to be deprived.

Remember the questions about the marine mammal? I brought that up because many working those animals encounter seasonal fluctuations and physical influences (rut, breeding, pregnancy, etc.,) that affect the animal and the food consumption naturally. Relying heavily on food reward can become a crutch that handicaps your skill as a trainer.

In the social context, the animal that refused to come into the night quarters might be in danger (predators) or prevent maintenance that would endanger the rest of the group. So, using the tools of the trade would include social deprivation or motivation in order to gain cooperation and reduce risk. In other cases, confinement or restraint is often used to prevent or control injury that an animal may inflict upon themselves or others. This is especially true in many situations when introducing new animals into an unfamiliar area or new group.

Environmental deprivation can be restriction from things in the environment but it could also be the loss of opportunity to perform. It could be the absence of enrichment or restriction to certain types over others. It even could refer to the loss of the opportunity to observe or interact with the visitors or trainers!

Conclusion

So, if you think of it for a while you will discover that most of us have used deprivation at some time or another. Perhaps we did not realize it or perhaps we had another idea about what it was that we were doing. Just understand that it is a tool that can be used within a successful management program. It does not stand on its own, it is used in conjunction with other tools. If you are happier using the terms such as controlling the dietary, social or environmental management —do so but be realistic and remember what term this activity is rooted to.

Consistency and reliability from animals comes from an entire program of management. Diet, environment, social situations, stimulation and a variety of other categories influence a good program. Motivation of the animal is the key to a successful training program. Specifically, knowing how to motivate an animal in numerous ways. It is important to remember that although many equate food reward as their primary tool, it should only be one of many. That is why I attempted to give you some items to chew on.

There are some people that actually think that there is no ethical way to withhold anything from their charges. However, in the real world this does not hold true. It occurs whether you do it intentionally or not! Remember, if the animal is cooperative, inquisitive, and exhibits a good attitude then you are probably doing something right. If the animal is uncooperative, unmotivated, or is reserved then you need to look at your management program. The animals generally respond in a desirable and enthusiastic fashion if you are doing your job correctly. Just remember that using deprivation (or whatever you choose to call it) is not a cure all, it is a tool!

Final Notes

Deprivation is a topic that falls under the regulations for animal handling and training. The Secretary of Agriculture monitors the Animal Welfare Act (AWA) but the responsibility for enforcing the AWA is done by the Administrator of the Animal and Plant Health Inspection Service (APHIS). Regulations established under the AWA are contained in the Code of Federal Regulations (CFR) and are updated in the Federal Register. (This section is up now for changes, comments and decision by April 18, 2000). Regulations regarding training and handling of animals are found in Title 9 CFR part 2. Section 2.131 contains provisions for the handling of animals. Although I have included an excerpt from the latest version, the complete document can be found via the internet location: "http://www.access.gpo.gov/nara/cfr/waisidx_99/9cfr2_99.html"

Sec. 2.131 Handling of animals.

(a)(1) Handling of all animals shall be done as expeditiously and carefully as possible in a manner that does not cause trauma, overheating, excessive cooling, behavioral stress, physical harm, or unnecessary discomfort.

(2)(i) Physical abuse shall not be used to train, work, or otherwise handle animals.

(ii) Deprivation of food or water shall not be used to train, work, or otherwise handle animals; Provided, however, That the short-term withholding of food or water from animals by exhibitors is allowed by these regulations as long as each of the animals affected receives its full dietary and nutrition requirements each day.

Acknowledgements

Special Thanks to Doug Cook and Stephen Meck for their stimulating dialogue, feedback and comments regarding this topic.

Suggested Reading Material

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About the Author: Since 1978, ARKANIMALS.COM Director, Diana Guerrero has worked professionally in a variety of animal facilities. Attending and completing courses in both animal management and training from institutions both here in the United States and Europe, she has been affiliated with some of the best organizations. She is an alumni of The Moorpark College Exotic Animal Training & Management Program, The Gentle Jungle Animal Affection Training School, The International Training Centre at the Jersey Wildlife Preservation Trust, and special program extensions with Marwell Zoological Park and Kent University. Guerrero started her career in the marine mammal field working as a naturalist, and subsequently became involved with terrestrial animals in zoos and other facilities. Guerrero writes a variety of animal-related columns, including the popular series, Unusual Animal Careers and does seminars nationally. Watch for two of her book projects in the summers of 1999 and 2000! Questions for ABCs should be submitted to Diana directly via e-mail:> arkabc@arkanimals.com< or via regular mail to ARKANIMALS.COM, P.O. Box 1154, Escondido, CA 92033 USA.

AAZK Book Sale

Sale price is 20% off the Suggested Price.

Previous books *may* still be available, with some price increases

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\$40.00	\$32.00	<u>Wild Ocean - America's Parks Under the Sea</u> - Sylvia A. Earle, Wolcott Henry - The focus of this 224-page book is America's 12 marine sanctuaries. A National Geographic Society book. hardcover
\$15.95	\$12.76	<u>With Love</u> - Jane Goodall - Ten heartwarming stories of chimpanzees in the wild. hardcover

To Order: List the items you are ordering along with your name and complete mailing address. Include a shipping fee of \$3.00 for the first item and \$2.00 for each additional item. Checks payable to: "AAZK Book Sale" (**U. S. Funds Only - No Cash or CODs please**). Call or fax for shipping fees when ordering from outside the continental United States. Please call, write or fax your request *before* sending any money. We will help to find the best form of shipment.

Mail requests to: AAZK Beardsley Zoo Chapter, Attn: Linda Tomas, 1875 Noble Ave., Bridgeport, CT 06610-1600 U.S.A.; Phone: (203) 394-6563; Fax: (203) 394-6566; e-mail: beardsleyz@aol.com

Legislative Update

Compiled by Georgann Johnston
Legislative Advisor
Sacramento, CA



Thick-Billed Parrot Safe from Logging for Now

The nesting sites of half of the remaining western thick-billed parrots (*Rhynchopsitta pachyrhyncha*) in the world are now protected by a conservation agreement entered into by a land cooperative in Northern Mexico. The Tucson-based Wildlands Project and five Mexican conservation groups agreed to protect 6,000 acres of old growth forest in the Sierra Madre Occidental mountains of northern Chihuahua, about 150 miles south of the U. S. border. Without the agreement, logging of the area was set to commence within the next two years.

The agreement was made with members of the Ejido Cebadillas, a 40,000-acre land cooperative. A spokesperson for the Wildlands Project stated that no one has ever made a land protection deal with an Ejido before. "This was a negotiation solely between conservation groups and all 74 private members of the cooperative." There was no official government involvement even though U. S., Mexican and Canadian governmental representatives attended meetings where the negotiations took place.

The thick-billed parrot is an endangered species in both Mexico and the United States. Originally, its range covered the mountainous sections of Arizona and New Mexico and on down into the northern mountain ranges of northeastern Mexico. The birds became endangered due to habitat loss and hunting.

The concept behind the agreement is to protect the lands and demonstrate to Mexican landowners that income from conservation can equal or surpass that from logging. The money, approximately \$250,000 US will come from The Wildlands Project, a nonprofit organization with headquarters in Tucson. The agreement will pay Ejido members 50 percent of the net value of the uncut timber within the protected area over the next 15 years. The Wildlands Project will fund a forest study for the remainder of the cooperative's land, which will hopefully result in a sustainable logging plan.

Source: *Environment News Service Online* 15 February 2000

Clinton Proposes Record USFWS Budget

President Clinton has proposed a \$250 million increase in the Department of the Interior's U. S. Fish and Wildlife's budget for fiscal year 2001. This budget proposal includes substantial increases in funds for the National Wildlife Refuge System, wildlife law enforcement, and state and community-based habitat conservation efforts. One of the unique features of the newly proposed budget is funds for "State Non-Game Wildlife Grants". This federal money will be used to protect and manage land that provides native habitat for wildlife specific to one or more individual states.

The new State Non-Game Wildlife Grants funding, if approved by Congress, will provide \$100 million in grants for states, Native American tribes, and U. S. territories for non-game wildlife habitat restoration, conservation, planning, monitoring and recreational

use not inconsistent with the protection of the flora and fauna being protected.

Another \$30 million is designated for the North American Wetlands Conservation Fund -- double the amount of funding allotted for the year 2000. This fund supports voluntary, public-private partnerships to protect and restore wetland ecosystems that serve as habitat for migratory birds and other wetland associated species. An additional \$30 million is being requested to acquire land in the Everglades, Florida, for ongoing USFWS wide efforts to protect this unique ecosystem.

A request for \$52 million (an increase of almost \$13 million) is included in the proposed budget to begin a multi-year initiative to rebuild the USFWS law enforcement program. The Service alleges that it is at a "critical crossroads with a declining and under-equipped force facing increasingly complex challenges. Changes in technology and the rapid growth of the Internet poses a whole new set of challenges in stemming the illegal trade, unlawful exploitation, and habitat destruction that threaten our planet's wildlife" according to Jamie Rappaport Clark, Director of the USFWS.

Money for fisheries, public education, control of non-native invasive species, migratory birds, coral beds, and a plethora of other flora and fauna is included in the proposed budget. Moreover, an additional \$3.4 million is allotted for programs outside the borders of the United States including such things as the tiger and rhino protection programs in India, Indonesia and Africa, and money to establish and maintain nesting habitats for migratory birds in many Central and South American nations.

Source: U.S. Fish and Wildlife Service Press Release 7 February 2000

Rhino & Elephant Foundation Announces New Educational Initiative

The Rhino and Elephant Foundation (REF), a quasi-governmental agency headquartered in South Africa, has announced a new wildlife welfare educational initiative. The REF, under its newly elected Board, is committed to improving wildlife welfare standards in South Africa and other African nations. It is the aim of the REF to provide a sound basis of education and training programs that will improve the conditions under which these two species of animals are maintained within South Africa's borders.

A program is being developed in cooperation with the University of Pretoria, School of Veterinary Science, to offer comprehensive wildlife welfare training programs. Interestingly enough, it is planned that the program will be made available as a correspondence course on the Internet - allowing the REF to reach more gamekeepers and wildlife park personnel than it could were the course only offered at the university's physical facility itself.

The REF has changed its objectives and is expanding its interests to include all species of wildlife that are present in South Africa and which are in danger of extinction. The main stated objectives of the REF now is to develop and create awareness of a wildlife welfare ethic through education, effective monitoring and cooperation with other organizations in order to promote high standards of wildlife welfare both nationally and internationally.

Further information about the REF's new ventures can be obtained by contacting the executive director at ref@intekom.co.za.

Source: WildNet Africa Media Release 3 February 2000

United Kingdom Enlists New Wildlife Crime Fighting Tools

The annual meeting of the Partnership for Action Against Wildlife Crime (PAW) held its most recent meeting at the London Zoo. The Partnership is intended to put Britain at the forefront of global efforts to tackle wildlife crime that is both an international as well as a national problem. Statistics offered to PAW's attendees show that UK customs officers

confiscated 1,573 live animals and birds, 1,782 plants, 51,675 animal parts, and 387,695 grams of caviar in one year.

A new National Wildlife Crime Unit - a team of law officers who will tackle organized wildlife crime at every level - is being established by the UK Environment Department. The Environment Minister Michael Meacher stated that: "This new unit will keep Britain at the forefront of global efforts to tackle wildlife crime. We have to step up our battle to beat the wildlife bandits - from bird egg thieves to tiger and rhino poachers."

The new unit will make use of new testing procedures including DNA scans so sensitive that they can detect, for example, products containing only 10 percent tiger bone. Improved detection techniques will be accompanied by tougher penalties for persistent wildlife criminals. Proposed new laws in the Countryside Amenity and Conservation Bill, due to be published shortly, will boost the powers of the police and the courts and allow them to impose jail sentences on serious offenders. It is the job of the UK wildlife law enforcement team to detect and bring to justice people who violate both CITES laws as well as European Union and UK national laws governing trade in wild plants and animals.

Source: Environment News Service Online 17 February 2000

Nepal Develops a New Tiger Protection Plan

The government of Nepal has come up with a "Tiger Conservation Action Plan" in response to increasing pressure from conservationists around the world seeking protection for the endangered Royal Bengal tiger. The plan to save Nepal's remaining 200 tigers, prepared with assistance from the World Wildlife Fund, focuses on ecosystem management and building a partnership with local citizens.

Increasing incidents of poaching and loss of habitat are the main reasons for declining tiger populations. Previously, Nepalese conservation efforts focused on establishing protected areas for tigers to reside without coordinating any conservation of areas outside of national parks. Now, the new Conservation Action Plan views the country of Nepal as an entire ecosystem with a need to provide habitat protection for these animals whether they reside in or outside national park boundaries.

To encourage the participation of Nepalese citizens, the government will pay local communities surrounding national parks a 30 to 50 percent share of the park income to be used directly in their community development. The government and the World Wildlife Fund believe that this fiscal motivation will not only increase public awareness about the importance of tiger conservation but will offer an alternative to tiger poaching as a means of income for poor Nepalese citizens.

The Royal Bengal tigers roamed freely throughout Nepal's southern plains until about 30 years ago. At that time, their range was reduced to three protected areas in central and western Nepal. While 19 percent of Nepal's total land area is protected, a lack of coordination among different government agencies and poor implementation of existing

laws have hindered the carrying out of effective conservation efforts. According to governmental officials, a draft of the proposed law enforcing CITES commitments is on its way to the Nepalese Parliament and official protection for these mammals should be in place within the next few months.

Source: Environmental News Service Online 29 February 2000

Yellowstone Grizzly Draft Conservation Strategy

The Fish and Wildlife Service's Draft Conservation Strategy for the grizzly bear (*Ursus arctos horribilis*) in the Yellowstone Ecosystem is now available for comment. The Conservation Strategy is the management plan for the grizzly in the Yellowstone ecosystem that will be used when the population is recovered and delisted. Completion of the Conservation Strategy is a task in the Grizzly Bear Recovery Plan.

Comments on the draft supplemental information must be received on or before May 31, 2000. Address Comments to: Grizzly Bear Recovery Coordinator, U.S. Fish and Wildlife Service, University Hall, Room 309, University of Montana, Missoula, MT 59812. Comments can also be mailed electronically to FW6_grizzly@fws.gov>.

For further information contact: : Dr. Christopher Servheen, Grizzly Bear Recovery Coordinator (at address above), at telephone (406) 243-4903. Persons wishing to review the Draft Conservation Strategy may obtain a copy by contacting the Recovery Coordinator. The document also is available for viewing and downloading at: <http://www.r6.fws.gov/endspp/grizzly/>.

Supplementary Information: Restoring an endangered or threatened animal or plant to the point where it is again a secure, self-sustaining member of its ecosystem is a primary goal and legal requirement the grizzly bear recovery plan. Recovery plans guide the recovery efforts for listed species native and describe actions considered necessary for conservation of the species, establish criteria for recovery levels for downlisting or delisting them, and estimate time and cost for implementing the recovery measures needed.

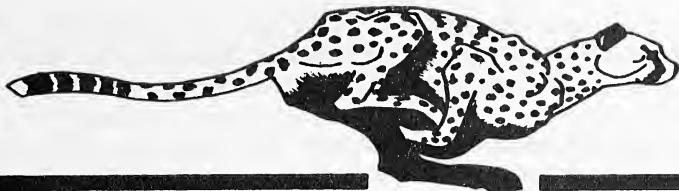
The revised Grizzly Bear Recovery Plan was approved on September 10, 1993. The grizzly bear was listed under the Act as a threatened species in the 48 conterminous States on July 28, 1995 (40 FR 31734). Threats to grizzly bear populations come primarily from habitat modification caused by human activities and from direct bear/human conflicts resulting from recreational and resource use activities, highway and railroad corridors, illegal mortality, etc. The grizzly bear population in each of the ecosystems included in the Plan can be delisted independently once recovery criteria stated in the Plan are met. The Plan provides that prior to delisting of the grizzly bear population in each ecosystem a conservation strategy will be developed and implemented that outlines all habitat and regulatory mechanisms that will be in force after recovery of that population.

Source: Federal Register: March 2, 2000 (Volume 65, Number 42)Page 11340

Condor's Survival Chances Rising

If the "weather cooperates," six more California condors were scheduled to be released near Big Sur, CA, says the San Francisco Chronicle 3/3/00. The release brings the number of free flying symbols of "California wilderness" up to 58 with more expected to be released next year near Mt. Diablo.

Source: GREENlines Issue #1081 3/7/00



R E A C T I O N S

A Question and Answer Forum for the Zoo Professional on Crisis Management

*By William K. Baker, Jr., Zoo Curator
Frank Buck Zoo, Gainesville, TX*

Question

What do you look for in a shipping crate and what precautions should staff members take in advance of a dangerous animal transfer or shipment?

Comments

The care and management of dangerous animals in captivity requires specialized skills. This would include animal management, concentration, communication, and teamwork. The same can be said for the transfer and shipping of dangerous animals. Always stay within established procedures and avoid personal interpretation. Examples of this would include: "I know what the procedures are, but this way is faster", or "It has always been done this way." Procedures for handling dangerous animals are usually designed to protect the staff and the animals. If a problem exists, then it should be addressed at the departmental level to effect a change in policy.

Also, never use someone in an animal shipment who seems to believe that they know more than everyone around them. You know the type, they've been a Zoo Keeper for a year and suddenly they're an expert. A little knowledge is a dangerous thing. Managers who lack animal experience are even more dangerous, they will look you straight in the face and tell you how you should load that animal. Still, there are some general guidelines to follow when preparing to move dangerous animals.

Dangerous Animals

1. Animal - Learn to recognize species-specific behaviors and what they mean, (ie: primary signs of aggression). Also, each individual animal has its own unique personality that will set it apart from other animals in the collection. It's important to review animal and medical records to establish if the animal has any particulars that might affect a move. This would include a history of escapes or problem sedations. In short, know your animal.
2. Technique - The species type will, to a great extent, determine what method is chosen to move an animal. But, the animal's history should be taken into account when deciding which technique to use. If the animal has a history of aggression and escapes, then the best choice may be to use a dart rifle for the sedation. For larger specimens that are simply difficult to move, a standing sedation may be an alternative. Another option is the use of operant conditioning to desensitize the animal to the transfer process. In some situations this may even eliminate the need for a sedation altogether.
3. Equipment - This is probably one of the most overlooked areas when it comes to moving

animals. It is absolutely imperative that the equipment be inspected, tested, and repaired before it is used for a dangerous animal. This would include:

A. Inspect the fittings, bolt assemblies, mesh, and weld points on all holdovers and runways that are to be used. Inspect and test all shift doors and guillotines. Pay special attention to wires, pulleys, and counterweights. Make repairs and replace worn locks as needed.

B. Inspect and test manual and hydraulic squeezes. Look for stress points in the metal, tighten all loose parts, and replace all damaged parts with new ones. Lubricate all moving parts and hydraulics. Always make sure that all controls are out of the reach of the animal, and weld sheet steel over obvious gaps that the animal could utilize for contact.

C. Shipping crates should be animal specific. Crates should be stored properly inside a building or warehouse to prevent weathering. Before the crate is used it should be closely inspected. Tighten all fittings and remove sharp edges from the interior. Use light to your advantage in the inspection process. Check the exterior and interior with a flashlight or close the crate with someone inside to check for gaps. (Hopefully your fellow Zoo Keepers will let you back out!!) If there are any doubts about the strength or stability of a crate, don't use it!

D. Many shippers and institutions use trailers that have been customized or designed for exotic animals. These are especially popular for hoof stock applications. Always inspect every square inch of a trailer for wear, loose fittings, and safety hazards. Personally, I prefer the double containment of a crate inside of a trailer or in the cargo area of a truck box for safety reasons. But, the important thing to remember is to never use a domestic stock trailer for exotics. It's unsafe, impractical, and downright dangerous.

4. Animal Care - Animals should have access to food and water if they are to be in transit for an extended period of time (more than 24 hours). Expect the water intake to increase in direct proportion to the degree of stress. Always watch for indications of severe stress or myopathy. If possible, a Veterinary Technician and a Zoo Keeper should accompany the animal during transit. It is a good policy to send along a portion of the current diet for the new facility to use in acclimating the animal to a diet conversion. Also, make sure that all paperwork, health certificates, permits, and routing numbers are in order before shipment. Any of these can easily tie an animal up in red tape and increase transit time. Always try to conduct transfers early in the day to provide a time buffer and avoid heat stress. Conversely, watch the temperature on winter mornings when shipping more sensitive species. Also, remember to bring ADT's, EDT's, and copies of the veterinary records if they haven't been sent in advance of the shipment.

5. Crisis Management Precautions - Plan for contingencies, escapes, and injuries. It usually never happens; but it doesn't hurt to be prepared. If the animal has a background of aggression or escapes, it would be advisable to have extra darts or back-up dart rifles ready. Serious consideration should be given to the presence of an armed response in the event that the situation degrades and human life is threatened. This should be done discreetly and without interfering in the actual animal transfer. Transfers should be conducted early in the day before public hours and while other Zoo Keepers are in their respective areas (no sightseers).

Shipping Crate Specifics

Crates come in a wide variety of styles, shapes, and materials. Over the years I have seen everything from cardboard boxes to custom carbide and stainless steel models. There are really three basic crate styles: carrier, wooden, and steel.

1. Carrier - This is the most common crate used in the industry today. The more well known brand names are Vari-Kennel®, Pet Porter®, and Pet Taxi®. They come in a wide variety of sizes and styles with numerous types of locking mechanism. They're versatile and proven performers. The best features I have found are the spring pin doors, (top and bottom) and the oversize crate screws. Pin doors tend to be more secure and less failure-prone than rotary mechanisms in my experience. Oversized screws provide more gripping surface which enable the user to torque the crate shells.

One of the tricks I have learned over the years is to place the screws facing down into the holes. The advantage is that if the grip cap loosens in shipment due to vibration, the screw is still held in the hole by gravity. Conversely, if the hardware faces in the opposite direction the screw will surely fall out when the cap falls away. Also, remember when using these types of carriers that they do have structural limitations. Best uses: birds, reptiles, small mammals, cats, and primates, and very small hoof stock.

2. Wooden crates - These tend to be used for a wide variety of animals including everything from small mammals up to large hoof stock. They are normally built in house by the staff at an institution. This is where the real disparity in quality arises. Would you want to move a dangerous animal in crate that was thrown together by your maintenance department? Surprisingly, this is exactly what many zoo's do. Pretty scary isn't it? I have seen crates that were so poorly designed, constructed, or just plain worn out. I wouldn't ship my Russian blue in one, much less something potentially dangerous.

Animal shipping crates should be designed and built by animal staff with carpentry skills. Failing that, a professional animal transporter who builds crates should be contacted. Wooden crates should be built out of the highest grade of wood available and secured with stainless hardware and screws. Handles should be integrated into stress points and run the length of the crate to provide maximum purchase. There is nothing worse than transferring a crate and loosing your grip. It's hard on the animal and the keeper's foot. A couple of nice features to consider is using liquid nail to secure pieces as they are secured. This will enhance stability and make the crate more waterproof. For maximum waterproofing use a sealer or polyurethane finish on the outside surfaces. Best uses: small to medium sized mammals (cats, primates, hoof stock), birds, raptors, reptiles, and marine mammals.

3. Metal crates - This style of crate is considered to be state of the art by many in the profession when it comes to shipping animals. Many designs incorporate folding handles, door dams, adjustable ventilation, swing-out feed bowls, external fill lines for integral water bowls, and locking mechanisms. The best example on the market that I can think of which offers this level of features are Zoo Pro® crates.

Still, the even more cutting edge stuff is what is often custom fabricated by professional shippers for handling megaherbivores such as elephants, giraffes, and rhinos or in some cases large cats. These are custom built to animal specifications, in other words they're species specific. At this point you can have any feature incorporated that you can dream of, but your budget better be able to support your dreams. Best uses: Anything.

Conclusion

Most dangerous animal transfer and transport operations go smoothly with limited risk to animal and staff. But, the staff should always be prepared for the unexpected. The best precautions are to use common sense, check everything twice, and go slowly. Always rely on your instincts and stop if something doesn't look right. Remember to make safety your number one priority. Dangerous animals are just that....Dangerous.

Acknowledgement: I would like to recognize the staff at Fossil Rim Wildlife Park for producing what is probably the best in-house design for a shipping crate I have seen in my professional career.

NEXT MONTH: What options are available for crisis and safety training?

If you would like to submit a question for this column or have comments on previously published materials, please send them to: AAZK, Inc., 3601 S.W. 29th St., Suite 133, Topeka, KS 66614 Attn: Reactions/AKF.

(About the Author: Since 1985 Bill has been active in the fields of science, zoology and wildlife management. His education and experience include a B.S. in wildlife management and post-graduate studies in zoology, Lab and Museum Assistant, Shoot Team Leader, ERT Member, Large Mammal Keeper, Senior Keeper, and Zoo Curator at various zoological facilities. His area of research is crisis management in zoological institutions, which draws upon practical experiences and training as a Rescue Diver, Hunter Safety Instructor, NRA Firearms Instructor, and Red Cross CPR/First Aid Instructor.)

Koala Census Opportunity Available

Since 1994, the Zoological Society of San Diego, in conjunction with the Australian Koala Foundation (AKF), has been organizing teams of representatives from interested zoos to assist in collecting field data in Australia with regard to koala habitat utilization and tree species preferences. The data gathered will be analyzed to develop regional models for habitat use by koalas and to subsequently complete further computerized Geographic Information System based mapping specific to koalas called the 'Koala Habitat Atlas'.

Two 2000 field expeditions are currently being offered to zoo representatives interested in participating in this koala conservation effort. Proposed dates for the expeditions are as follows:

1. August 12th -27th in north-central New South Wales in an area determined as high priority by the NSW Koala Recovery Team.
2. September 30th - October 15th to the Strezelecki Ranges area of southern Victoria.

Accommodation during the field work may be in dormitory type facilities with participants helping to prepare group meals. Total costs incurred by each participant include \$750 U.S.(which covers all meals, accommodation and travel costs during the field expedition), plus airfare and any extra costs incurred outside of the actual field work, such as hotel and meal expense before or after the field work is complete. Spaces are limited and will be filled on a first come first serve basis.

Any interested representatives should contact Valerie Thompson by mail, fax, phone, or e-mail as listed : Valerie Thompson, Associate Curator of Mammals, San Diego Zoo, P.O. Box 551, San Diego, CA 92112-0551; phone (619) 685-3226, fax (619) 232-4117, e-mail vthompson@sandiegozoo.org

Animal Behavior Modification & Training in Zoo Keeping, a Survey (revised)

By David Sweetland, Keeper
Charles Paddock Zoo, Atascadero, CA

Zoo keepers are naturalists. The better we know our animals' lifestyles—biologic, social and psychologic—and how they exploit their world (wild and captive) the better we will do our job (see, Sweetland, *Animal Keepers' Forum*, March 1999).

Animals operate in response and relationship to their environment, wild or captive. Take a jaguar, for instance. *Panthera onca* normally lives solitary yet has to contend with other jaguars whose territory surrounds theirs, and they do indeed breed. Mother jaguars must nurse, care for and teach their offspring. Jaguars have their own unique *modis operendi*; they act in tune with their genetic blueprint and with what they learn. But what if they didn't learn how to be a predator or what prey looks like?

“...young bobcats raised in isolation without the chance to catch live prey did not attack a white rat placed with them, unless the rat tried to escape. At first, their attacks were not efficient, but after some experience, they were seizing prey by the neck and rapidly killing them. Apparently, inherited components of this behavior pattern are refined by learning.”

(Miller/Harley, 1996)

Nature and nurture. Animals learn by their genetic hard wiring, by their family and in order to adapt and survive—even thrive—in their environment.

In the zoo realm we have animal situations which are problematic. How can we use nature and nurture, behavior and training to our benefit and to the animal's welfare? Two condensed stories from the annals of San Diego Zoo Animal Behavior Director, Gary Priest, will show that learning how to use animal behavior training is perhaps one of the most important aspects in our zoo keeping and husbandry duties.

Gary tells the story about the primate, *Mandrillus leucophaeus*, a seriously endangered baboon species in Africa (Oats, 1985). Extinction for this catirrine monkey in the wild is a good possibility. The San Diego Zoo in 1990 had an adult male drill—Loon—who is diabetic. During his initial veterinary care isolation episode, Loon developed severe neurotic stereotypical behaviors. Having three-inch canine teeth, a dangerous and strong disposition, and a potentially deadly disease, Loon's existence was in question. Gary's primary goal as a zoo behavior management specialist was to train Loon to accept daily insulin injections via operant conditioning (Priest, 1999).

Within six weeks Loon did indeed learn to trust his animal caretakers, present his legs for blood tests and arms for daily injections. A secondary goal to this training strategy, the stereotypical behavior diminished. Fear and aggression were controlled. Loon was physically and psychologically healthy, and able to be relocated back on exhibit.

Several factors in the natural life of a drill were incorporated into the operant conditioning sessions. These included the means of foraging, the social requirements of this species of monkey (touch, vocalization, communication), and problem solving in order to earn a favored food item. In the last ten years the zoo sector has developed these skills; cetaceans have been trained in similar manner for the past 40 years.

"Years earlier, I had trained a killer whale to offer the ventral side of its flukes for the routine collection of blood samples. The conditioning process employed the use of systematic desensitization to an increasingly sharp stimulus. . . The whale was differentially reinforced for its acceptance of the (needle).

Remarkably, within seven days, the animal was reliably accepting venipuncture for blood collection. Prior to the development of this technique, blood sampling required that the water from the whale's pool had to be drained, the whale guided into a canvas sling and hoisted from where the (blood) vessels were closest to the surface" (Priest).

Animal training has versatile applications. Consider this scenario: Most sheep farmers would say there is no good coyote in their region. Yet coyotes are necessary to keep rodent populations in check, et cetera. Ranchers traditionally use lethal gas or poison, traps and guns to try and exterminate these canidae. Gustavson, et al found that if sheep carcasses were laced with a sickening emetic (not to kill the varmint), the coyote will develop aversive association to lamb chops (1974). Essentially, behavior management is used to train coyotes to hunt the natural prey of their ecosystem.

Classical and operant conditioning (behavior training) is the basis of zoo animal behavior modification. To know the technology we must study those with the technique.

The great Russian researcher, Ivan Pavlov (1927), first documented that dogs, given the opportunity to sniff a meat aroma, salivate. An unconditioned stimulus - meat, produced an unconditioned response - drooling (Meyers, 1989). Add a sound such as a tuning fork when the food was presented creates an association, a signal. After several pairings of the food with the sound, the tone alone would produce the saliva response and the dog was conditioned to *turn on* at the sound. Pavlov called this cause and effect relationship, classical conditioning.

American behavioral psychologist, B.F. Skinner (1953) and his colleagues took Pavlov's experiments a step further. His hypothesis: untrained lab rats in a scientific glass box can be taught to perform certain ways. Skinner *shaped* his subjects behavior by successive and progressive approximations towards the target goal - pressing the lever. As the rats moved toward the lever, a food reward was immediate.

Therat would soon associate the direction of movement with the rat chow pellet. As Skinner guided his rats towards the lever, he would positively reinforce that thinking and behavior with food. Of course the experiment was a success, a rat can learn or be trained to press a bar, etc. Skinner called this training, *operant conditioning* because the animal operates on its environment to improve its living condition. The drill learned to cooperate with Gary to improve its living condition via the same procedures.

A final thought comes from the book, *The Modern Ark* by author Vicki Croke, writing

about zoo species collection says, "... active, enriched animals...grow smarter with complex behavioral calisthenics. The San Diego Zoo drill, displaying stereotypy, was given an affirmative action plan that had the secondary affect of breaking or disrupting the obsessive-compulsive cycle. Behavior management is used to both add new behaviors to an animal's repertoire and, in the process or by design, adjust the animal's mental attitude by eliminating other destructive behaviors.

The idea that zoo animals can learn is a difficult concept to put into practice. We first must be taught this technology, then experiment with/study animal behavior and associating reinforcers. Working with terms like *analysis, antecedent, stimuli, reward, consequence, and bridge* is like taking a college lab class in advanced psychology. However, this science is about giving animals help to operate in their domain for the maximum benefit, least trauma and best presentation to the public. Veterinarians and zoo staff can use these tools to keep their animals healthy, breeding and looking good.

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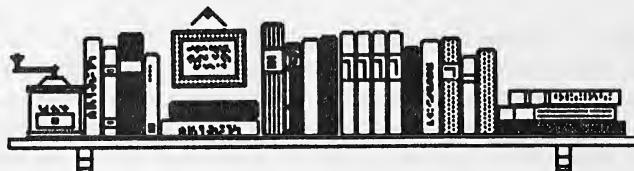
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Editor's note: To read more about Loon's training, see "The Use of Operant Conditioning in Training Husbandry Behaviors with Captive Exotic Animals" by Gary M. Priest published in the Proceedings of the 16th National Conference of the American Association of Zoo Keepers, Inc. held in New Orleans, LA 1990 (pgs. 94-108)



Book

Review

The Koala: Natural History, Conservation and Management

By Roger Martin and Katherine Handayde

Illustrations by Sue Simpson Copyright 1999

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*Review by Shea Cogswell
Kansas Museum of History
Topeka, Kansas*

The Koala: Natural History, Conservation and Management gives the reader a broad background on the koala living in Australia. The book covers such things as what makes the koala so popular with people, its place in folklore, its food sources and the variety of conservation methods that are being used to help this species. Although the book reads like a textbook, the concepts are easy to understand with the aid of pictures and maps.

The book delivers an abundance of information that is organized and detailed in appropriate places. Each chapter has a number of sections that are titled with bold headings. If the reader were looking for specific information in the book, they would find it with little difficulty. The authors do a wonderful job of arranging the book to match the arrangement of the words in the title. The natural history section fills most of the book with historical and biological information such as relatives, gestation and young, food and diseases of the koala. Much of the discussion in regards to diseases and conservation is given to Chlamydia, a disease which can cause many problems for the koala.

The management section ends the book with concepts to help protect the koala and its habitat. The ending included an interesting discussion of the koala and the native people of Australia and the spiritual effect that they have on each other, and how this can be applied to helping protect this down-under species.

The book is very useful, not only in an educational setting, but also for people who have a general interest in the koala. As previously stated, the visual aids are good but there are a few drawings that would work better with some changes. One example included a process of changes that a cell goes through when an "elementary body" enters the cell body. The drawing included a description to explain what was happening, but only a few of the changes were noticeable in the drawing. The drawing had a section where a change in the cell should have been seen, but there was no discernable difference at all.

The book is a good source for people who are just learning about the koala or people who are wanting certain details. The references can be especially useful for people who are looking for additional specifics about this threatened species.

AAZK 2000: BEGINNING A NEW MILLENNIUM

Columbus Zoological Gardens

October 8 - 12, 2000

Powell, Ohio



CALL FOR PAPERS & WORKSHOPS

This Years Conference theme: AAZK 2000: Beginning a New Millennium

Suggested topics

Keeper skills necessary to move into the future, conservation projects (both in situ and ex situ), expanding keeper roles—studbook keeper, visitor educator, etc., enrichment, training.

Abstracts Must Include the Following Information:

Name of presenter and co-authors, Zoo or Aquarium affiliation, position or title, title of paper or workshop, short bio of yourself (for introduction).

Limit abstracts to one or two paragraphs. Abstracts must include in detail the significance of the topic to be presented along with the results, conclusions, or benefits of the work described. Poorly written abstracts or those not containing the proper submission information will be returned.

The deadline to receive abstracts for all presentations is July 1, 2000.

Mail abstracts to the following individuals (one copy to each):

Gretchen Bickert, Program Chair
Columbus AAZK Chapter
P. O. Box 1256
Powell, OH 43065

e-mail abstracts to:
gbickert@colzoo.org
fax abstracts to: (614) 645-3564

Jeff Phillips, National Program Chair
136 Harpersfield St.
Davenport, FL 33837

e-mail abstracts to:
jeff_phillips@worldnet.att.net
fax abstracts to: (407) 939-6391

PRE AND POST CONFERENCE TRIPS

PRE-CONFERENCE TRIP

CLEVELAND ZOO AND SURROUNDING AREA - Friday, 7 October

Overnight trip to the Cleveland area. The day will be spent at the Rock 'n Roll Hall of Fame, Great Lake Science Center and the Omnimax Theater. Spend your evening dining on your own in the Flats area of Cleveland. Delegates will then spend the night in the zoo's Wilderness Cabin. Saturday will be spent touring the zoo. Cost includes: Friday breakfast, overnight lodging, Saturday breakfast, lunch and transportation to and from Cleveland.

COST \$45.00 - *special thanks to Cleveland Zoo and AAZK Chapter for sponsoring most of this trip!*

POST-CONFERENCE TRIPS

THE WILDS—Friday, 13 October

Day trip to The Wilds. The Wilds is located in Cumberland, OH and is North America's largest conservation facility. The tour will include open range view of wildlife from around the world. The trip cost includes transportation, light breakfast, lunch, tour of the Wilds and afternoon snack. Return to Columbus same day. This trip is limited to 45 people.

COST\$30.00

THE WILDS & HOCKING HILLS

Depart from the Wilds to the Hocking Hills. Includes transportation, dinner, overnight lodging Friday and Saturday, meals on Saturday and breakfast on Sunday. Lodging is at the Woodland Suites at Old Man's Cave Chalets. Each Woodland Suite overlooks the forest, has a private hot tub, microwave, small refrigerator, stove top burner and outdoor grill. Each suite sleeps four people. October is an awesome time for hiking and for observing the changing colors. This is truly one of the prettiest areas of Ohio. Return to Columbus Sunday afternoon. This trip is limited to 25 people.

COST\$175.00

**AAZK 2000: BEGINNING A NEW MILLENNIUM
COLUMBUS, OH 9—12 OCTOBER 2000**

NAME _____ POSITION _____

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REGISTRATION FEES

REGISTRATION DEADLINE IS 1 Sept. !

AAZK MEMBER	*\$135	
AAZK MEMBER'S SPOUSE	*\$135	
NON MEMBER	*\$185	
LATE FEE (AFTER 1 Sept.)	\$ 25	

DAILY RATES

SUN 8 OCT (ICEBREAKER)	\$ 25	_____
MON. 9 OCT (Papers, buffet breakfast, breaks)	\$ 35	_____
TUES 10 OCT (Papers, breaks, auction dessert)	\$ 35	_____
WED 11 OCT (ZOO DAY (lunch)	\$ 35	_____
THURS 12 OCT (Papers, breaks, lunch)	\$ 35	_____
THURS 12 OCT (BANQUET)	\$ 20	_____

Pre conf (see detail at right)	\$ 45	_____
Post conf to The Wilds (see detail at right)	\$ 30	_____
Post conf to The Wilds & The Hocking Hills	\$175	_____

TOTAL FEE ENCLOSED

••Fee does not include the cost of Conference Proceedings••

T-SHIRT (please indicate size) Med Large X large XX Large

Are you bringing an Auction item??

Please make checks payable (in U. S. funds) to: AAZK 2000 Conference

Send Registration form and all fees to:

**AAZK 2000 Registration
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**Fee includes a \$35.00
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HOTEL INFORMATION

The official conference hotel is the Adams Mark Columbus. The daily rate for a single or double is \$99.00. Rate for a triple is \$114.00, and rate for a quad is \$129.00. Reservations may be made by calling 1-800-444-ADAM. The discounted rate IS ONLY AVAILABLE UNTIL 1 SEPT.! Mention reference code AAV 007 to get discounted rate.

You may check the conference website for information on additional hotels New Conference web site. [Http://aazk2000.homestead.com](http://aazk2000.homestead.com)

AIRLINE INFORMATION

The official conference airline is America West. Discounts vary from 5% to 10% depending on how early you make your reservation.

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SPONSORS NEEDED!!!!

Many exciting sponsorship opportunities are available! Any amount your chapter would like to donate would be wonderful. We need sponsors for the following: Conference breaks, hospitality suite evenings and for international keepers (flight cost, lodging). Please contact Beth Pohl 614-645-3400 or Bpohl@columbus.rr.com for more information! Thank you.

CONFERENCE 2000 CALL FOR PHOTOS !

We are trying to put together a photo display for the conference in Columbus. The display will include photos from past National AAZK Conferences. (We are starting from scratch since the old albums seem to be lost.!)

PLEASE SEND US YOUR PHOTOS! !!

Format for sending is as follows: Indicate on the back of the photo the people/ person's name(s) that are pictured in the photo and the conference it was from.

PLEASE NOTE: pictures will not be returned!

Please send photos **by 6 June 2000**

Send photos to:

**Scott Shelley
P. O. Box 1256
Powell, OH 43065**

Exhibitry and Enrichment of North American River Otters (*Lontra canadensis*) at The Arizona Sonora Desert Museum.

By Kayla Grams
Arizona-Sonora Desert Museum
2021 N. Kinney Rd, Tucson, AZ 85743

Abstract

Enrichment has evolved into more than just adding devices to enrich the animals - it has become part of the exhibitry, husbandry and daily care. Our North American river otter (*Lontra canadensis*) was housed in a sterile enclosure with a large pool and small shore areas. The idea of providing a sandy substrate or "sand box" led us to develop a more naturalistic and aesthetically pleasing environment, and provided other enrichment opportunities. A naturalistic land area above the exhibit was fenced off and a ladder and slide were provided for access. Data and observations alone showed significant improvements to the well being of the otter through its physical environment. Opportunities to provide food naturally were experimented with, some proving successful, such as live fish prey that allowed the otters to hunt. This also provided a distraction when first introducing our male and female otter. The addition of a female otter enhanced the social environment and reproductive opportunities. In order to more successfully manage these animals a training program was created which has made a positive impact on the otters through daily interaction. The complexity of this exhibit continued to change when the ladder and slide were removed and a large already dead cottonwood inside the exhibit was lowered into the pool. The otter exhibit, social situation, training and enrichment options and how these have developed over time will be discussed.

Key Words: Enrichment Enclosure Substrate Naturalistic Prey Social Training Complexity

Introduction

David Shepherdson and Jill Mellen presented the following concepts at the First Environmental Enrichment Conference in Portland Oregon. What is an enriched environment? It is one that allows animals to perform natural behaviors, gives animals control over their lives, eliminates frustration, makes captive environments more interesting, gives animals more choice, and allows animals to be more active. Enrichment of the enclosure involves the physical environment including shape, size and complexity. Complexity consists of an animal environment such as visual barriers, climbing or traveling structures, substrates, rest/sleep areas and temporal complexity. Manipulable objects such as toys and vegetation, the opportunity to use five senses, and the social environment are all beneficial to the animal. The types of food offered, the frequency and presentation play a large role in enriching the lives of our captive charges. (First Conference on Environmental Enrichment 1992). The enrichment workshop held at the American Association of Zoo Keepers National Conference in San Diego, CA and the First Environmental Enrichment Conference in Portland, OR were both influential to the Arizona-Sonora Desert Museum's (ASDM) development of its own enrichment program.

The Museum's committee is structured by a handout submitted during one of the Enrichment Conference workshops: Enrichment as a Part of Husbandry (First Conference

on Environmental Enrichment 1992). The focus of the committee is the natural history of a species. The goal is to provide enrichment that will allow an animal to exhibit its natural behaviors. For each taxon, its social structure, habitat use, feeding strategy, diet, primary senses, and activity cycle are researched. Various departments participate in monthly enrichment meetings to strive for these goals. Specific meetings on new exhibitory or holding areas are beneficial for the incorporation of enrichment at the beginning stages, as well as the renovation of older exhibits.

This paper may sound like a husbandry paper, however, enrichment encompasses all behaviors and should be considered part of our daily care, just as important as providing food and water. Change in an animal's environment, as we have seen with ASDM river otters, offers opportunity for investigatory behaviors, and exploration. Novelty and complexity improve activity, appearance, and socialization. Everything we do affects our animals' lives.

Renovations

Enrichment through physical and social environment as well as training and daily enrichment for our North American river otters has evolved over the past four years and continues to change. In 1994 at the Arizona Sonora Desert Museum (ASDM) a solitary male river otter was housed. The otter enclosure at the time and today consists of a 6.0m x 4.3m pool approximately 2.4 m deep with two gunnite land areas, 1.8m x 2.14m in size. (All measurements are approximations.) A waterfall and shallow stream divides the land areas. Visitors view the otters from the top looking down into the exhibit, but can also view from below at an underwater viewing area, which includes an underwater otter den. The only furniture is a hollow log at the bottom of the pool surrounded by rocks and a hollow log on shore that was provided for enrichment. To secure the otter off-exhibit a small tunnel built into the rock from one of the land areas leads to dens below ground level. These dens are 2.4m x .6 m in size and are divided by a guillotine door. This area also contains a sump pump and other maintenance features. Staff accesses this area through a manhole. Figure 1 shows specific locations of pool and shore areas.

An impromptu meeting to discuss the importance of different substrates and how this could be accomplished with minimal land space developed into an exciting renovation project. The original idea was to create a rim of concrete on one of the shore areas and fill it with sand (Acuña, 1999). Further discussions by individuals of the mammal and bird department, maintenance, design and planning, and geology staff helped to identify several needs and aesthetic improvements. Otters are considered semi-aquatic animals that spend a majority of time on land. (Hediger, 1970). To ensure that the otter would like a sandy substrate, an experiment was conducted. A plastic tub filled with sand was chained from above and placed on shore. When introduced to this novel item, the male otter swam around awhile before approaching the tub and then stuck his face in it. He swam away and then came back to dig around in it. After a day he began to roll and rub himself in the sand before using it as a nest box to sleep in. The experiment proved to be successful.

The Museum's Environmental Enrichment Committee began to brainstorm and research ideas for the exhibit. Oregon Coast Aquarium helped by providing survey information about other otter exhibits. Information of interest from these surveys included water vs. land ratios, enrichment, vegetation destruction, reproduction and holding facilities. With this in mind and ideas gathered from the enrichment meeting, the preliminary design of the otter enclosure began to take shape.

The main objectives included several ideas. We would provide the otter with access to

an expanded "dry land" area with natural soil substrate enhancing the overall aesthetics by increasing the naturalistic aspect of the exhibit and the welfare of the otter. Environmental enrichment opportunities of live fish for predation, and a slide of some sort would be offered. We hoped to improve the holding facilities, and improve interpretive opportunities via signage.

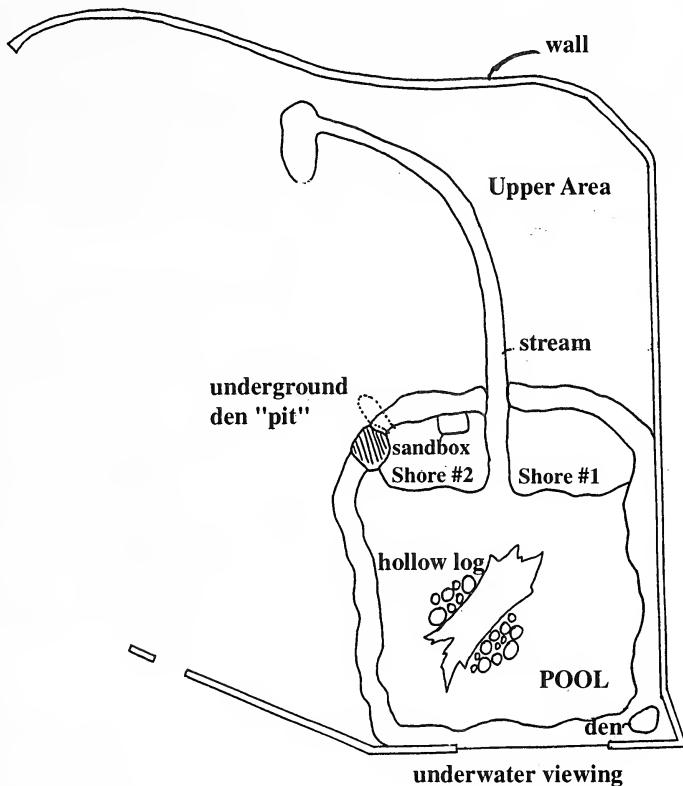


Figure 1: Original Otter Exhibit

In order to ensure a successful project, the otter expansion would be carried out in at least two phases, the first consisting of doing only as much as necessary to provide the otter with access to the natural soil substrate above its gunnite grotto, and experimenting with inexpensive opportunities for enrichment. No money had been approved yet for this project. However, the containment barrier for initial expansion of this project would be relatively inexpensive.

The Museum's philosophy is to promote natural behaviors, preferably through naturalistic means. Any sort of unnatural enrichment can be provided after visitor hours with a few exceptions. A "waterfall slide" would be highly desirable, if it could be designed so that the otter actually used it. Any ladder or slide should be naturalistic in appearance; however, experiments would be conducted to determine the animals' preferences before building any permanent additions to the enclosure. The Director questioned the effectiveness of a slide to increase otter activity. He cited evidence that a series of small, stepped pools would work better. It was decided to discuss this issue further after the experimental phase. A simple artificial ladder would be used along with a simple artificial slide made of PVC approximately 3m long. We would also provide live fish. Securing a

few densely "twiggy" branches or dead shrubs in the water for refugia for the fish would be looked into. Containment barrier, rockwork, holding facilities, existing service vault, and staff concerns were also determined (ASDM, 1994).

Research Methods

In 1995 a study was set up with these questions in mind. What will be the effects of a new environment? Will the otter more actively explore and forage in his exhibit? Will stereotypic behaviors decrease? What locations will he utilize the most? One of the goals was to increase feeding times and eliminate scheduled times. Baseline data was collected using scan sampling of behaviors and otter location before renovation of the exhibit. During the study the presence of visitors was noted. Due to time constraints and other factors the information is not scientifically complete, however just by observing behaviors and looking at some of the data, improvements were evident.

Baseline data shows he spent a considerable amount of time swimming in the main part of the pool and on shore #1. Most of his sleep time was in the sandbox. His daily activity generally consisted of early morning activity of swimming. Between 0900 and 1300 hrs. he would sleep. Once he awoke, he would spend time in the pool and then anticipate food delivery. He had a sequential pacing pattern in which he would swim out and back to shore, run to the end, roll, sometimes-bipodal stand, and back to the water to swim the same pattern. He repeated this continuously until he received his diet. The auditory sound of the keeper cart and calling of the Red-tailed hawks (*Buteo jamaicensis*) before they were fed would send him into a frenzy, increasing his pace. The male otter was fed only once a day, with a few treats of smelt offered in the morning. His diet consisted of dog chow soaked in water and mixed with a small amount of feline. One day a week he received smelt, and another day chicken necks. Originally food was placed in a metal bowl and lowered with a chain onto the shore. This was changed to keepers throwing food into the water or on shore to encourage foraging.

Once the new area was complete, the removable ladder and slide were added. The tree sleeve was placed around the large cottonwood due to an otter's ability to climb. Sleeves were placed around other trees as well. Plexiglass® barriers were placed on top extending out from the rock wall to prevent him from getting out. There was plenty of vegetation, trees, a large dead snag, a small pool that turned into the stream, planted sedge (*Carex agrostoides*), and several large rocks. A kennel was placed up top to provide a safe haven, and shelter. (Figure 2) On 24 October 1995 the male otter was allowed access to the upper area. It took him three minutes before he ventured up top and another three minutes of checking out the top of the slide before he unintentionally slid down, all four feet sprawled out trying to slow the rapid descent. He stayed in his pool and seven minutes later began to really explore his new habitat. After only viewing his world from below, he was able to look out of the enclosure for the first time. He frequently stood on a large rock to get a better view and watch the general activity coming out of the concession area. He seemed to retreat to the pool to swim after spending short periods of time in the new area. He investigated the kennel, and discovered he could stand up against the plexiglas barrier. After spending a considerable amount of time swimming he explored the slide and tried to go from the bottom only getting half way. He spent a lot of time foraging throughout and rolling on top of the Sedge. Around 1000 hrs. he went into the kennel and slept. It was a shorter time then what he was used to and he spent this time exploring, swimming and watching people. He went back to sleep for another hour and then was up exploring the sedge and rooting around in the streambed for insects.

The male otter was not given access to this area overnight. We still wanted to monitor his behaviors more closely. The next day was spent foraging quite a bit in the upper stream and under the sedge that he had smashed down the day before. A smelt was

strategically placed onto the slide in hopes of encouraging him to use it. He knew it was there but chose to explore other areas but eventually climbed onto the slide from the lower land area and then jumped off. Locomotor exploration and watching people continued. In the old exhibit vegetation was offered on an irregular basis, which he would take to the under water viewing den for nest building. Now with much more to choose from he was observed picking up sticks, leaves, and palm frond pieces to make a den in the kennel. It was pretty humorous watching him carry sticks longer than the kennel opening trying to get them to go into the kennel.

The third day exploratory and investigatory behaviors continued. He spent time in the back of the exhibit on a large rock looking out and watching the activity on the outside. He continued to carry vegetation into his kennel and appeared to be more relaxed, taking longer naps. The sedge continued to be a favorite area to forage. Our resident wild black

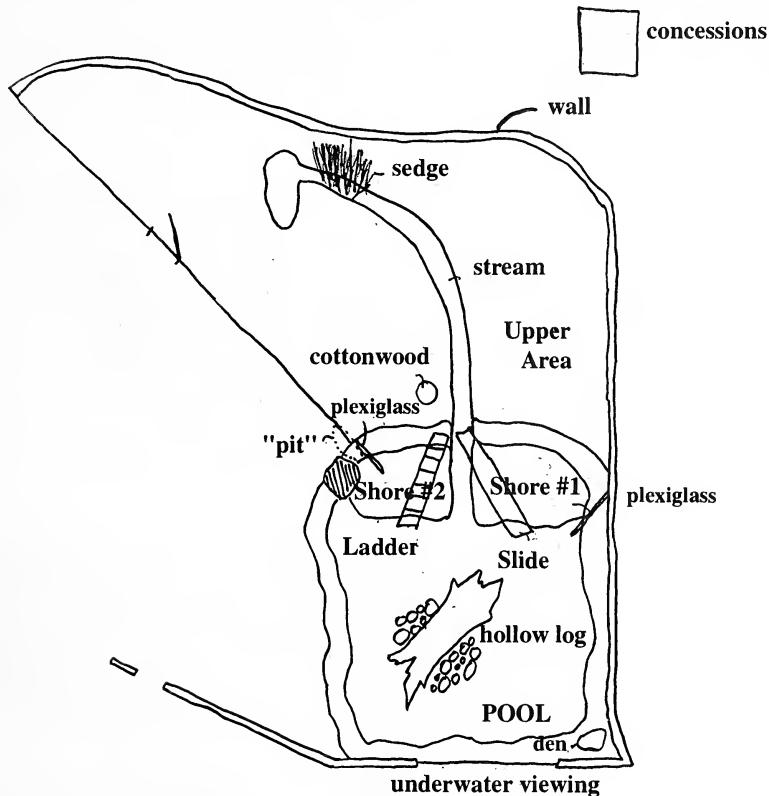


Figure 2: Addition of Slide, Ladder and Upper Area

vultures (*Coragyps atratus*) provided an element of unpredictable enrichment with their presence. They flew in around 1100 hrs. to bathe in the upper stream. The male otter did not notice them at first but finally saw them. He attempted to go up the ladder and was chased down. He swam around for a long time then sneaked up the ladder scurrying past the vultures to the far end of the enclosure. After a short period of time he ran back to the ladder. However, because one of the vultures was right next to it, he hesitated to use the slide and quickly went down the ladder instead.

The male was given access to the area overnight after 11 days. The sandbox was removed

since he spent most of his sleeping time in the kennel and little time with the sandbox. After 15 days, he continued to spend a lot of time foraging in the sedge, or rooting around in the upper stream, or chasing birds. Pacing continued with the arrival of his meal.

In November 1995 a meeting was held to evaluate the otter exhibit. The botany department removed dirt from the upper stream; a majority of the sedge that had been flattened were taken out, with the reassurance that they would grow back. The maintenance department was having problems with their filtration system. The male otter would spend a lot of time in the upper streambed, loosening dirt which spilled over into the pool. This was disappointing since it was a great form of enrichment. We discussed thinning out the sedge and creating streambed wallows instead. A suggestion was made to replace the kennel for aesthetic reasons. Our design and planning department would work on creating an artificial log and this was completed in February 1996. He did not use it for shelter, but used it to defecate on. The slide was removed due to lack of use. To meet one of our goals, aquatic plants were planted in the pool instead of a cluster of twiggy mesquite as we had originally discussed. It was hoped that they would become established and would provide a place for the fish to hide. It took the male otter about two days to remove them all.

Enrichment

In August 1996 the Enrichment Committee discussed more enrichment ideas, some of which were offered by our Docents through a class on enrichment. One of these ideas included getting another otter for companionship. The department had discussed the potential of breeding otters. Live fish such as tilapia and minnows and fresh water mussels would be pursued. It was also brought to our attention that the large cottonwood tree in the upper area was dying and would make a great natural bridge. The Enrichment Committee already had a list of enrichment. Our successes included crayfish, a fish release device made out of a bucket with holes, and live tilapia a type of feeder fish. The crayfish and tilapia were released an hour before giving the otter access to allow for acclimation and to find hidey places. Hunting and manipulative behaviors increased.

Results

The activity cycle of an otter is generally crepuscular or nocturnal. Some researchers have also found them to be diurnal, active throughout the day. The peak feeding activity occurs from dawn to midmorning (Reed-Smith, 1994-95). This activity was pretty typical with our male otter. Most of the behaviors observed in all the data taken included locomotor activity, foraging and feeding, resting, body care, marking, auditory, investigatory and exploratory activity. The addition of the new area increased exploratory, visual, locomotor exploration, and better body care.

Body care is important, especially fur maintenance. Wild otters will roll and rub on sand, grass, or other natural substrates to clean their fur and maintain insulation as well as to dry off quickly (Toweill and Tabor, 1982). Normally grooming took place on the hard gunnite shore. The sandbox provided the male otter with opportunity to roll and rub to clean his fur, therefore, providing a more natural substrate improved his well being.

Stereotypy is behavior that is repetitive in nature and has no goal or function. These behaviors can be attributed to the predictability of food delivery, no effort to obtain food, and a stimulus-poor environment. Other stereotypic behaviors may be attributed to the lack of social, nesting and grooming substrates, which an animal may seek out (Carlstead, 1998). The male otter had a specific stereotypic pattern he followed before feeding. If he woke up around 1230 hrs., behaviors appeared repetitive until he was fed, sometimes

not until 1400 to 1500 hrs. He was very attentive and watched people waiting for someone to offer him food since the concession area was right next door and we frequently saw this happen. An otter standing on hind legs is considered an investigative posture that can be misinterpreted as begging (Duplaix-Hall, 1972). He regularly stood up like this around feeding time and I don't doubt that people thought it was cute and fed him. He learned that by doing this he could receive food. This was a sunken exhibit with no real visual stimulus or complexity, prohibiting him from seeing general activity. There still was the normal behavior of anticipating food delivery, however the pacing has been somewhat reduced with the increase in feeding times and the unpredictability of delivery.

We removed the slide for lack of use. He never appeared to get comfortable sliding down and seemed to avoid it. According to Chanin (1985) otters enter streams that appear slide like and are seen climbing back up using little pools as a means of getting from one area to another. The fact that artificial slides are made of unbiological materials, have too steep of an incline, and otters may have a tendency to crash-dive may frighten and discourage an otter from using it (Duplaix-Hall, 1972). Otters were encouraged to slide using training as a reinforcer at the Washington Park Zoo (now Oregon Zoo). Researchers found that it increased activity levels, made a more interesting exhibit and allowed more control over their environment (Mellen et al., 1981). We tried to encourage our male to go down the slide by placing food midway down. He figured out that he could climb up on its side to receive the treat and rarely used it from the top.

Advantages to allowing animals to capture their prey over humans feeding prekilled foods or food that doesn't look natural is beneficial (Markowitz, 1982). The most successful enrichment was the feeding of live prey. The animal's predator/prey behaviors stimulate activity. At least a dozen tilapia fish were released into his pool for the first time. It didn't take him long to search and chase the fish, eating only a portion, and caching his prey until he was exhausted.

Social Enrichment

A female otter, five months old and handraised by a rehabilitator arrived at ASDM in June 1997. Modifications would need to be made to the upper exhibit area for habituation and introduction purposes. Another fence was added to the otter enclosure dividing the upper area. An eight-gallon Rubbermaid® pool was provided because the natural pool already in the enclosure was not big enough to swim in. (Figure 3) She was brought down to the otter enclosure a month after quarantine so she would become familiar with the male otter. She was given access to the male's side and the large pool on a daily basis. It was important at seven months of age that she was acclimated to the large pool giving her time to gain strength in swimming before an introduction took place. We discovered that she climbed trees very well. The tree in the enclosure connects with trees outside of the enclosure, so another tree sleeve was added. On 29 August 1997 the male otter was allowed access to the upper area next to the female. There was much reaction through the fence. He was very nippy towards the female, however she seemed to want to play with him. We still entered her enclosure to socialize and have training sessions with her. When the male otter was present she completely ignored the keeper sitting in the enclosure with her and would look for him whenever he was not visible.

An unplanned introduction took place when the male broke welds on the mesh in her small natural pool and entered the area with the female. The hole in the fence was repaired and the male was given access to the upper area. During training the female seemed scared of the male and ran to the far corner of the exhibit, vocalizing the entire time. She eventually went down to the fence line where he was and showed submissive posturing. Whenever he was out of her sight she appeared to become anxious. The

ladder was taken down nightly until we felt comfortable, and we finally left it overnight in September. The male continued to bite aggressively through the wire mesh at the female. We also placed another mesh screen on the middle fence so he would not bite and injure her feet. On 29 September 1997, the female was found hiding in a log in the lower pond area of the exhibit. She seemed unhurt but excited. A large hole was found in the pond of the temporary holding pen in the same area as before. Once again the fence was repaired and large rocks placed on top at both sides.

Recommendations were made by other institutions to introduce otters during the breeding season, which is one reason we waited to put them together. Live tilapia fish were placed in the pool before the introduction in hopes of offering a distraction. The male and female were given access to the exhibit at the same time. The addition of the tilapia helped to preoccupy the male. There were many interactions, including aggression, wrestling and attempts at breeding. The female was nervous and submissive initially but later started to defend herself, chasing the male frequently. She was also very vocal chirping and calling out to the keepers. The otters were shifted apart at the end of the day.

The next day the female began to swim in a stereotypic pattern, chirping and vocalizing calls made when pups solicit their dams (Reed-Smith, 1994-95). This may have been attributed to the presence of staff. She undoubtedly focused on us whenever we were present.

Typically copulation takes place in the water (Reed-Smith, 1994-95). Behaviors characteristic of otter breeding were observed. These included auditory, olfactory, tactile, visual, wrestling, muzzle touching, anal-anogenital sniffing, face-pawing, submissive behaviors, mounting and attempted copulation by the male, and fighting. The injuries to the female were fairly superficial. Her neck was raw and red and plucked of its fur where he would grab hold to try and breed her. She received several scrapes and some punctures to her feet and tail but nothing too serious. He received a couple of scratches. We observed some tail suckling as well from the female.

On several occasions the male would dive then slap the water with his forepaw aggressively especially if she went into the underwater viewing den. Tilapia continued to be added to their pool for seven consecutive days. The female was uncertain initially what to do with the fish. She followed them around the pool pushing with her nose and would then carry them to shore. She did not eat any. He showed investigatory and exploratory behaviors, spending considerable amount of time in her area when she was swimming in the large pool.

At two weeks they were left out together overnight. The next morning they were found in their respective sides, in their own nests. On 23 March 1998 they were observed sleeping together under the fake log in her area. She frequently used this log as a nest area. They appeared to be tolerant of each other with little aggression and occasional wrestling bouts. In April there appeared to be more social interactions, and both began eating side by side. The female's chirping and vocalizing had significantly decreased and today she occasionally vocalizes towards us.

Training

The male otter was not reliably shifting into his lower den. The area consists of a tube that goes down into the gunnite leading into a small cage area. Keepers access this place from the top and go down a manhole. Along with his cage, our maintenance department can check on the water pump system. This area is dark even with the lights on.

We realized the potential that a training program could offer; however these animals needed to be managed consistently. The keeper staff at ASDM rotates areas every two months. Unless managers agreed to our proposal there would be a deterioration of training techniques. We began training with the hopes that the male otter would shift on a consistent basis. Visiting Brookfield Zoo, Shedd Aquarium, and Lincoln Park Zoo helped give us insight to otter husbandry and methods of training at our institution and shaping our program. Two people worked on training the otters for consistency. A whistle was used for the bridge and after the otter recognized the bridge we began to target train. The purpose of the target was to be able to move the male otter into his den without hesitations. By placing the target in various locations and positively rewarding

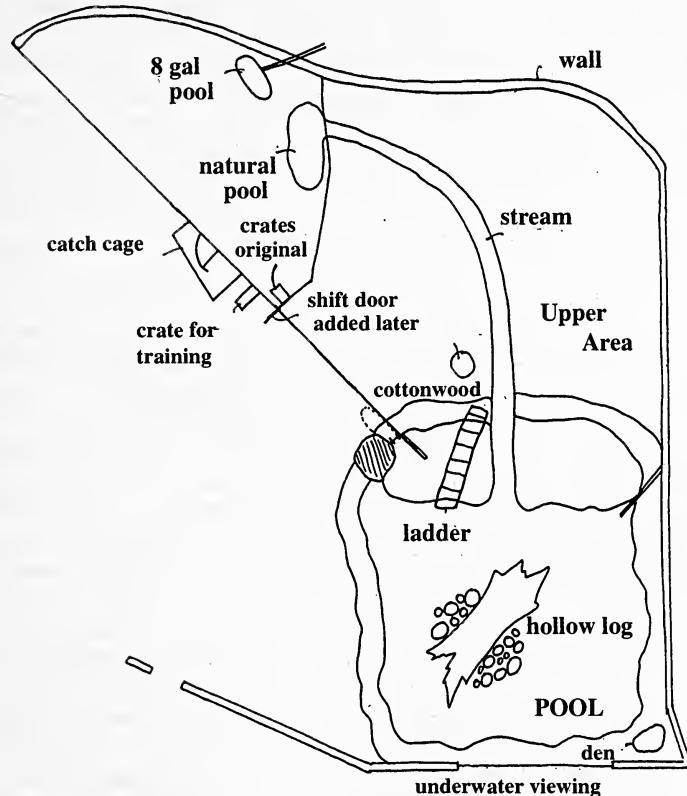


Figure 3: Upper Area divided to introduce female otter

him then others could shift him as well and he would be focusing on the target instead of the fact that he was being locked in a sterile environment.

The solution to this problem was no water source in his den. On several occasions he would be locked in most of the day due to pool washdowns and construction purposes. A pan or shallow tub of water was offered which would inevitably be knocked over. It is very probable that after having been locked in for a long period of time, he did not want to shift inside. Some days he shifted easily. Other days he sat in the doorway. When it was time to go back out on exhibit, he would not leave. Maybe at this point he realized he would not be locked inside. After having fed the otters once a day for many years we split the diet into two feedings. The a.m. diet was to be fed in his den, called the "pit", with the idea that he may shift in to eat. We were not successful. Otters eat their food with water in what is called "washing behavior" which is common otter behavior. We feel that not being able to shift the otter was due to the lack of a water source available

to the animal. We added a large black tub of water to his off-exhibit den and he started to shift in consistently.

Meanwhile, there were also shifting problems with our new female. We proposed to target train and kennel train her. The challenge for her was figuring out what food reward would motivate her to participate. She was very responsive and caught on fast even when not stimulated by the food reward and responded well to verbal praise. We utilized the target to get her to go into the kennel. After about a month she became more comfortable with the kennel. After she was moved to exhibit we continued to kennel and target train. Two kennels were used for this training, one a sky kennel, and the second wooden crate wired outside and attached to the exhibit mesh. Here we would be able to shift her into the crate from the outside without entering the exhibit. Another wooden crate was placed between the partitioned exhibit before introductions. We would be able to use this also for shifting and locking up the male otter first. He was very leery of the crate initially and the smaller size allowed him to keep his tail out, not shifting completely inside. The small crate was replaced with a large one and he can now shift completely in. We were able to vaccinate both otters in this new crate, where typically we would have to net them and restrain them. Although they were a little leery of the crate the day after, we tried to make it a positive experience and they still feel comfortable entering the crate.

A small waist high catch cage was built outside of the exhibit encompassing the entrance door. The female sometimes bolted out of her area and we felt it important to have a catch cage when she moved to the new enclosure. If she started to climb out we would grab the scruff of her neck and place her back into the exhibit. Like any other animal anxious to be fed, it was hard to enter the exhibit without her being right at the door. We introduced "mark" to her training using an old cafeteria tray. To get her used to going to it, the tray was thrown in from the outside, if she wasn't paying attention. She was rewarded for going near and then finally touching or sitting on the mark. A rock was used as a mark for the male otter. He didn't catch on as fast and we are still working on this behavior. To create better shifting capabilities a sliding door was manufactured between exhibits, which eliminated the use of the "pit". Keepers not wanting to enter the exhibit with the female otter could shift her over. Even though they shift readily we taught them to shift on command. "Paws up" with hand gesture is used to get a closer look at their feet. Currently we are training the female otter to lay on her back to gain a closer look at her teats in case of pregnancy, and the male otter to hold his mouth open for dental checkups. The female catches on to new behaviors quickly and has learned to roll on her back, however the male is a little slow with any new behavior taught. The otters are always eager to participate. They sometimes are not focused and get distracted easily, or are too hungry to respond correctly. They have the choice to participate. The otters are now fed three to four times a day and afternoons are dedicated to training sessions.

Natural Bridge

By fall 1998, the large cottonwood in the otter enclosure was dead. Arrangements were made to dig out the root ball and lower the top of the tree into the otter pool with the root mass remaining up on the second level. A professional arborist experienced with this process was brought in. He cut off the top portion and other limbs necessary for lowering it. Ropes were tied around limbs, and the soil around the base was dug out. The cottonwood was lowered using a tractor to slowly pull it down and was positioned appropriately to create a ladder that would be used for the otters to get up into the upper area. The manufactured ladder was removed. We had worked daily on kenneling the otters to move them to our keeper building for a couple of days. On 15 September 1998 they both shifted into the box crate, which they usually did during training sessions. One keeper

targeted them from the opposite end and the other shut the door. They were positively rewarded and on the drive up to the building they both appeared nervous, curling up together inside the crate. There was no aggression observed. After releasing them in our off-exhibit area the female became very playful, running and trying to get the male to play. She even went back into the crate to play. They were the same pens that she had been quarantined in and maybe seemed familiar to her. He was very nervous and would not even approach. Coaxing him to "target" appeared to calm him and the following day he appeared more relaxed. They were successfully crated again to go back to their exhibit. We anticipated that the male would be hesitant to shift into a crate and we didn't want this to be a bad experience by having to net him. On the way back to the exhibit they were active and excitedly moving around in the crate looking out through the holes. The otters maneuvered themselves up and down the cottonwood tree trunk fairly well. One branch extends up high above the pool and the female climbs it frequently. The bark provided plenty of enrichment and was gathered and taken to their underwater den.

The physical environment can be very rewarding especially if it is complex. Felling the large cottonwood provided great obstacle and locomoter complexity. They utilized the stripped bark for their nests and it also provided climbing opportunities for the female.

Discussion

The multi-level exhibit has created opportunities that our otters may not otherwise have had. The original exhibit limited us in providing substrates such as leaf litter or sand. These would eventually end up in the water, which would become a maintenance problem with pool filtration. The renovations in the otter exhibit proved to be effective in providing a variety of stimuli. It increased land to water ratio where otters spend most of their time. Natural visual barriers provided a safe haven for the otters to feel protected, to get away from visitors, and vegetation for shade. The importance of substrates provided digging opportunities, adequate coat care, and investigatory behaviors. Substrates such as dirt and leaves are added to help continued body care. Various interactions with birds, vultures and squirrels add to an interactive environment. Plant destruction today is minimal. Initially the male did tear up the sedge but they grew back and were thinned out as needed. They are not as thick today. We did try to provide refuge for the fish using aquatic vegetation; however, the male otter was able to manipulate something novel and ripped them all out. Activity levels and space usage all have increased. Our otters now have greater choices in exploring, investigating, locomoter activity, and foraging. They can now see general activity beyond the walls of a sunken, sterile enclosure. Predator/prey behaviors have made this a more interactive exhibit allowing the otters to hunt naturally. We cannot really tell if the males stereotypic pattern decreased. It appears to have changed, with the addition of two levels. The female otter does appear to swim in a circular pattern and doesn't spend as much time sleeping during the day compared to the male.

Male otters have typically been thought to be solitary in the wild (Chanin, 1985). The offspring generally stay with the female for a couple of years. Males and females do not habitually live together in pairs, but there is increasing evidence that river otters are more socially adaptable than previously thought. Males in particular are seen in multiple groups of 3-21 (Reed-Smith, 1999). Housing the otters next to each other allowed them to become familiar with one another visually and by scent. Enrichment is beneficial when introducing the animals because it can help to reduce aggression by offering distractions. When introducing novel objects we do not encounter much, if any, aggression with our otters. They are rarely separated yet have been observed spending time by themselves which mimics natural behaviors. Having 1.1 otters has allowed for reproductive behaviors and increased activity. This year during the breeding season the male showed copulatory behaviors, however it was not as aggressive as the first year

when they were introduced. We now feed the otters three to four times a day and they will eat side by side with little aggression observed. Feeding times can vary, offering the unpredictability of food delivery and increasing activity during the day. We have been able to successfully train our otters to a crate that has helped reduce stress in veterinary procedures and we now feel confident in transporting them to other areas if necessary.

The physical environment can be very rewarding especially if it is complex. Felling the large cottonwood provided a natural bridge, underwater obstacles, and locomotor complexity. They utilized the stripped bark for their nests and the tree also provided climbing opportunities for the female. The complexity of an exhibit and space utilized are all-important attributes to enrichment.

Conclusion

The benefits of having an older exhibit to renovate can be both challenging and rewarding. We have been fortunate to offer new opportunities for our otters on a yearly basis. The exhibit even today continues to change and we feel this constant flux contributes to overall enrichment. Artificial rocks were built to hide the plexiglas barrier and provide another containment area while expanding the exhibit again. (Figure 4) On 21 August 1999, the otters were given access to another area with dense vegetation. Increased exploratory and investigatory behaviors were observed. We will soon reshape the upper area to provide even more space if our otters successfully breed. The ability to recognize that enrichment plays a vital role in both husbandry and exhibiry will greatly improve our animals' daily care and most importantly, will improve the daily care and quality of our animals' lives.

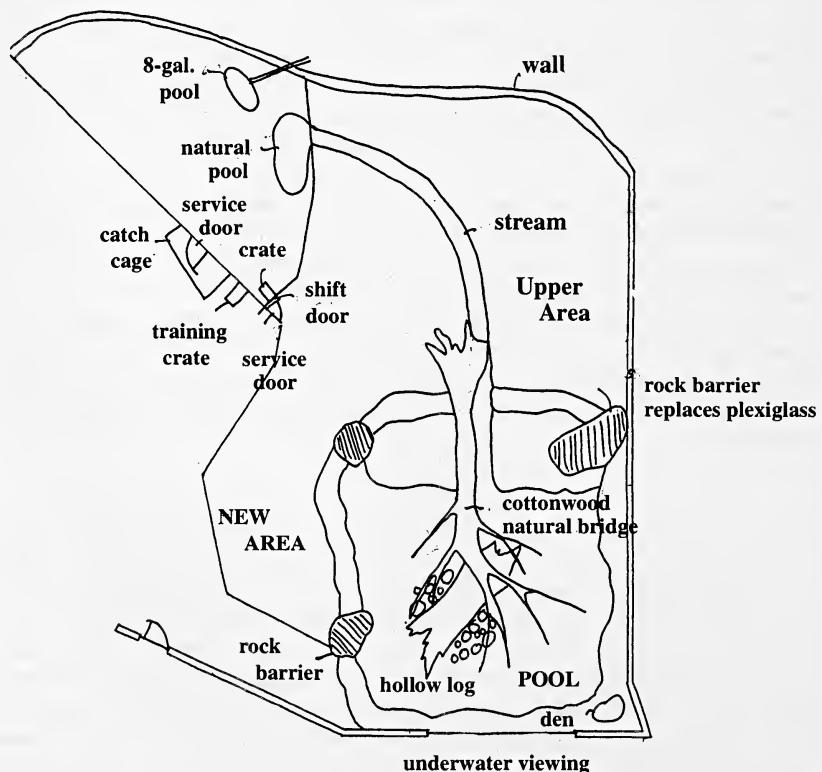


Figure 4: Cottonwood Bridge and new area

Acknowledgements

I would like to thank Stephane Poulin for helping to edit the videotape, and Pilar Lichty for her artistic qualities of making maps. Thank you also to Jan Reed-Smith and David Siebert for review of this paper. Their comments were greatly appreciated.

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*By Gretchen Ziegler, Sequoia Park Zoo
and Jan Roletto, Utah's Hogle Zoo*

For the past several months, this column has experienced the lowest number of submissions ever. We'd like to think that this is just a temporary 'rut' and that new submissions will come in soon so that we can stop using so many from our own facilities and from the listserve.

We realize that the column may have a difficult time competing with the listserve, which is convenient and a wonderful tool. But we hate to think that the time has come to phase this column out! It may come eventually, but meanwhile, the *AKF* still reaches many members who don't use the listserve, and we know that the Enrichment Options column is one of the most widely-read and used parts of the journal. It also has a huge advantage over the listserve - the ability to feature pictures and drawings of your ideas.

We understand how easy it is to just "not get around" to sending in ideas. But we also know that most zoos have enrichment committees now, and that there is a ton of excellent ideas being implemented. So we challenge every zoo to send in one submission (a picture or diagram would be great, too) regarding an idea, graphic, presentation, question, humorous enrichment antecdote.....your options are wide open. It's up to everyone to keep this column alive!

Send your submission by mail to: AKF Editor/Enrichment Options, 3601 S. W. 29th St, Suite 133, Topeka, KS 66614.

Or by e-mail to gzig@humboldt.com or coendu@juno.com

-Editors

ENRICHMENT PRESENTATIONS

I was involved in a popular enrichment presentation with our Junior Zookeepers program. Kids came to the zoo and heard a short presentation on enrichment (and training), which would be geared towards their age group. We tried to involve them as much as possible. One element that was very popular was the "training game" in which a kid pretended to be an animal and the group "trained" him/her collectively. We then took them through various areas where they

could see enrichment in action. Finally, the kids made their own enrichment devices. We had the kids make various toys for the bird show parrots. They used tubes, paper towels, boxes, etc. and then watched as the birds were given the enrichment. Piñatas are popular for these types of programs also.

Another event I was involved in occurred during "Member's Night" where guests were invited after hours to see some exhibits showcasing enrichment. Keepers would talk about the enrichment, and the kids would get the chance to play interactive enrichment games. One of the big hits was a bucket filled with Cheerios®, surrounded by a fence. The kids had to dip sticks into molasses, then poke the sticks through the fence holes and get a Cheerio® stuck onto the stick in order to retrieve it.

*—modified with permission from the enrichment listserve
Ryan Knight, Keeper
Denver Zoo, Denver, CO*

(Ideas appearing in this column have not necessarily been tested by the editors for safety considerations. Always think ahead and use good judgement when trying new ideas. Eds.)

You are invited to submit material for the Enrichment Options Column. This might include recipes, toys, puzzle feeders, olfactory enrichment ideas, etc. Drawings and photos of enrichments are encouraged. Send to: AKF/Enrichment Options, 3601 S.W. 29th St., Suite 133, Topeka, KS 66614.

**Visit the new AAZK Enrichment Website - www.enrich.org/aazk or to join the Enrichment Listserve by e-mail jackbell@humboldt1.com
An archive of past postings can be viewed at www.caza.org/enrich.**

Good & Bad News on Unknown Genus of Mammal

According to a report by the BBC News, zoologists climbing in the Peruvian Andes have discovered a new genus of mammal, "a tree rat the size of a domestic cat". The bad news is that an Andean weasel had just killed the tree rat. The scientists were amazed that "an animal so big remained undiscovered for so long," and concluded that it was probably related to "Inca tomb rats" long thought extinct.

--GREENlines Issue #1077 3/1/2000

Chapter News Notes

Cleveland AAZK Chapter

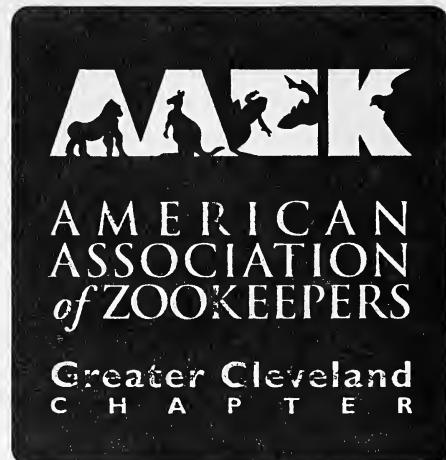
The Cleveland AAZK Chapter had a very successful 1999. It was a great fundraising year for us - our best yet. Our events covered a wide variety of activities from a simple "Pie Toss at the Boss" (raising \$250.00) to a Reverse Raffle, Bowling for Rhinos, Avian Adventure, Wolf Fest, and "Pictures with Santa" (which alone raised over \$8000.00).

Our total income for 1999 was over \$25,000.00 and we are proud to have donated almost \$13,000.00 of that to different conservation organizations and projects. Some of them include our sister zoo in Venezuela, the Hornocker Institute (tiger conservation), The International Wolf Center, Palm Cockatoo SSP, and two local projects - North Coast Bird Adoption and Rehabilitation Center and the Ohio Division of Natural Resources Endangered Species Fund.

Even with all the fundraising supporting various organizations, our Chapter felt we needed to do something more. So throughout the summer, we put on our waders, rolled up our sleeves, got down and dirty and collected the garbage that makes its way into the creek that flows through and alongside our zoo. It was ugly, but members will do almost anything for food afterwards.

As far as spreading education amongst other keepers and zoo visitors, we are in the process of creating a graphic depicting all the fish that are native to our backyard creek. With the help of NANFA (North American Native Fishes Association), we will be developing this graphic and also another that will walk the visitor through the creek of the past to this creek of the present.

This summer we plan on having more "Big Creek Clean-ups", in addition to making and placing screech owl nest boxes throughout the zoo.



We also have become involved with a group called "Roots and Shoots" (established by the Jane Goodall Institute), which consists of youth concerned with the conservation of wildlife.

All in all, 1999 was great for Cleveland AAZK. Our Chapter is looking forward to a fun-filled and productive 2000.

—Debra Simonik, President

Rio Grande AAZK Chapter

What's new in New Mexico? Well...

A box luncheon was held in December for our keeper staff. Shelly Lindsay showed slides documenting the evolution of the Australian exhibits at the zoo. Vicki Lenderman gave a demonstration of animal capture techniques using catch poles and nets, and Gretchen Bass spoke about our common goals and motivations as keepers and AAZK members.

The semiannual Area Enrichment Grants was awarded in January. Winning proposals were submitted by both the bird show and hoofstock keepers.

Our annual potluck dinner was held in February. Our guest speaker, Brett Snyder, DVM, recently retired from the Rio Grande

Zoo, who enlightened and amused us with tales of his veterinary escapades, as well as stories of the animals and keepers he has worked with through the years. Thanks, Doc!

Our members are also busy recycling on the zoo grounds, giving educational programs, and gearing up for Earth Day, as well as our Third Annual Bowling for Rhinos event.

AMERICAN ASSOCIATION OF ZOO KEEPERS



RIO GRANDE CHAPTER

Our officers for 2000 are:

President.....Gretchen Bass
Vice President.....Vicki Lenderman
Treasurer.....Catalina Parker
Secretary.....Shelly Lindsay

--Shelly Lindsay, President

Chesapeake Chapter AAZK

Through the efforts of the Chesapeake Chapter, over \$10,000.00 has been donated to local, national and international projects that support wildlife conservation. Animals benefitting from these funds include spider monkeys, diamondback terrapins and rhinos.

Funds were raised through gift sales and special events held in 1999 including "Night of the Living Zoo" and "Critter Christmas". Although zoo administration supports wildlife conservation, funds from the zoo's operating budget are not provided to make these donations. "The work of the Chesapeake Chapter of the AAZK is a fantastic complement to the conservation mission of the Salisbury Zoo," explains Zoo Director Jim Rapp. "Our mission is to raise awareness about wildlife conservation through our educational programs and animal exhibits. These donations prove the

dedication of the zoo staff to helping create a better future for wildlife."

Organizations receiving funding from the Chapter include the Nature Conservancy of Maryland, the Naticoke Watershed Alliance, ProNatura, and the Zoo Conservation Outreach Group (ZCOG). Donations range from \$250.00, used to support a local diamondback terrapin and horseshoe crab reintroduction program, to \$2,500.00, used to support spider monkey conservation in Mexico's Yucatan Peninsula.

The Chesapeake Chapter consists of the professional zoo keepers of the Salisbury Zoo, with assistance from other zoo staff and volunteers. The Chapter was formed when zoo keepers expressed a desire to support wildlife conservation projects outside of the zoo collection. "Professional zoo keepers are dedicated to helping animals at their own facilities and in the wild," said Chapter President Ann Kuntze. "These donations will go a long way towards preserving wildlife abroad and here in our own backyard."

A reception and check presentation was held in mid-March at the ESBA Education Center of the Salisbury Zoo where local recipients of the Chapter's grants and zoo staff were available for questions.

--*Salisbury News Release 3/13/2000*



AAZK Publications Available

AAZK Diet Notebook, Mammals

This reference work contains 325 diets representing 213 species and subspecies from fourteen participating institutions. The diets are arranged by taxonomic order using ISIS numbers in a durable and attractive three-ring D-style binder. Each Diet Response Form included contains the following information: common name, scientific name, ISIS number, the contributing individual, their institution, how long the diet has been used, whether the animals have bred while on the diet, the diet ingredients, instructions for preparation, notes and remarks, special considerations and nutritional analysis (if available). The Diet Notebook is a copyrighted publication of AAZK, Inc. Cost is AAZK Members \$40.00; Nonmembers \$55.00; and Institutions \$70.00. These prices represent **prepaid** order prices and include postage for the U.S. and Canada. Overseas orders should add \$20.00 for parcel post surface shipping. ISBN# 1-929672-00-4

Zoonotic Diseases, Second Edition

This 40-page reference work details the most common zoonotic diseases, offers guidelines for preventive control and covers personal hygiene and disinfection procedures. Information for each disease is presented in text format which includes: Etiologic Agent, Means of Transmission to Man, Global Distribution, Alternate or Intermediate Hosts, Human Incubation and Human Symptoms. Cost is \$6.50 for AAZK members; \$10.00 for Non-members. This price includes domestic shipping. Orders outside the U.S. and Canada should add \$3.00 per copy for air mail postage. ISBN# 1-929672-01-2

Zoo and Aquarium Professionals: The History of AAZK

This 216-page volume chronicles the first 25 years of the American Association of Zoo Keepers, Inc. from its beginnings at the San Diego Zoo in 1967. Included in the book is the early evolution of the Association, its projects, programs and committees, the histories of its 70-plus Chapters, and its involvement in two highly successful conservation programs - "Bowling for Rhinos" and the Ecosystem Survival Plan's Conservation Parking Meters. Cost is \$5.00 for all orders and includes domestic postage. Orders outside the U.S. should add \$3.00 per copy for postage. ISBN# 1-929672-04-7

What Kind of Animal Are You?

This charming collection includes zoo keepers' favorite anecdotes about their work, their animals, and the zoo visitors with whom they come in contact. This 40-page volume, edited by John Stoddard and originally produced by the Brookfield AAZK Chapter, contains chapters entitled Keepers and Their Charges, The Great Unwashed, Good Question, Misidentified & Mispronounced, Phone Calls, ZooLingo, Murphy's Laws of Zoo Keeping, and Clever Animal Names. This humorous, and sometimes irreverent, look at the world of zookeeping is sure to bring a smile to your face. Available for \$5.00 for AAZK Members; \$8.00 for Non-members. Price includes domestic postage. Orders outside the U.S. should add \$3.00 for air mail postage. ISBN# 1-929672-05-5

To Order: send title(s) of publication(s) ordered, desired number of copies, along with payment to: AAZK, Inc., 3601 S.W. 29th St., Suite 133, Topeka, KS 66614 USA. **All orders must be prepaid.** Make checks or money orders payable to "AAZK, Inc." (**U.S. Funds Only**). Be sure to include your name and complete mailing address. Mastercard and Visa orders may be placed by calling 1-800-242-4519 (U.S.) or 1-800-468-1966 (Canada). Allow 4-6 weeks for delivery. Information about these and other AAZK publications along with ordering information may also be found at the AAZK website: www.aazk.org

*Institutions wishing to advertise employment opportunities are asked to send pertinent data by the **10th of each month** to: Opportunity Knocks/AKF, 3601 S.W. 29th St., Suite 133, Topeka, KS 66614. Please include closing date for positions available and when setting these dates keep in mind that because of bulk-mail, most readers do not receive the AKF until the middle of the month or later. There is no charge for this service and fax listings of positions which become available close to deadline are accepted. Our fax is (785) 273-1980. Please Note NEW ADDRESS for AAZK!*

ZOO SOCIETY PRESIDENT...The Buffalo Zoo, an independent non-profit corporation located on 23.5 acres of urban property in Buffalo, NY, is seeking a highly competent and talented senior leader to assume the role of President of The Zoological Society of Buffalo, Inc. (The Buffalo Zoo). This position will report directly to the Board of Directors and is responsible to provide leadership and strategic direction in concert with the Board of Directors to maintain a strong, viable corporation that embraces the World Zoo Conservation Strategy. Position requires a true leader who has the collaborative skills to build confidence and trust among many constituencies internal and external to the corporation. Ideal candidate must possess strong leadership, senior stature, managerial and diplomatic skills, plus a strong strategic orientation. Must have outstanding interpersonal manner, be an articulate public speaker, skilled in oral and written presentations. Must be politically sensitive and community oriented and have the ability to evaluate and communicate effectively The Buffalo Zoo's mission, needs and strengths to community leaders and groups, elected officials, and agencies of government as appropriate. Must have a minimum of five (5) years experience in a senior management position, an established reputation and credentials appropriate to the leadership of a public corporation plus a proven track record of achievement. Ideal candidate will also have a sound understanding of Zoological Societies and the World Zoo Conservation Strategy. Should have advanced degree.

The Buffalo Zoo is the third oldest zoo in the U.S., and has an animal collection of approximately 1,065 individual animals including both exotic, endangered and local wildlife. Zoo is open year-round and is committed to a four-part mission: conservation, education, recreation and research. The Society has more than 13,500 members and is supported by annual contributions from the City of Buffalo, the County of Erie and other benefactors resulting in consistent annual revenues of approximately \$4.1 million. Zoo is managed by a 28-member Board of Directors, an administrative and professional staff of more than 50 employees, and has strong volunteer and docent support groups.

We are accepting nominations or self-nominations for this outstanding opportunity. Please contact Arnie Sherrin or Michelle Frisco at (215) 496-6666, or by e-mail at arnie.sherrin@kornferry.com or micelle.frisco@kornferry.com

ANIMAL KEEPER/BIRDS...Requires a high school diploma. Bachelor's degree in biology or related avian field preferred. Responsible for all aspects of daily animal husbandry, exhibit maintenance, observation and enrichment. Will provide assistance to education, public relations and support aspects of the zoo's operation. Salary \$10.58/hr. Send letter/resumé by **1 May 2000** to: Jim Schnormeier, General Curator, Sacramento Zoo, 3930 West Land Park Drive, Sacramento, CA 95822.

ZOOKEEPER (Mammals/2 positions)...requires one (1) year's experience working with exotic animals, preferably at an AZA-accredited institution. Education in zoology, biology or related field may be substituted for experience. Must be able to work in a team environment, possess good communication skills, and demonstrate safe work habits. Salary \$734.87 - \$1141.73 biweekly. Send resumé and include SSN and the title of the position for which you are applying to: General Curator, Miami Metrozoo, 12400 SW 152nd St., Miami, FL 33177.

BIRD KEEPER...the Denver Zoological Gardens is seeking a qualified bird keeper to work with a diverse avian collection of 181 species and 489 specimens. The majority of the collection is housed in BirdWorld, a multi-room exhibit building with over 7500 sq. ft. of environmentally controlled exhibit space. The public experiences habitats from

rainforests to swamps to seashores. In addition, there are several other avian exhibits located throughout the zoo emphasizing waterfowl, cranes and pheasants. We are looking for a candidate with experience in the captive husbandry, exhibition and propagation of a varied number of bird species. The candidate should have some experience in capture and restraint of varied bird species; avian captive propagation techniques; exhibit maintenance, design and renovation; good record keeping skills and the ability to work well as part of a team. There are opportunities for some zoo and field research and travel to conferences. Requires one of the following: 1) Bachelor's degree in an animal related or animal behavior-related field plus completion of either an internship or docent/volunteer in the animal department of an AZA-accredited institution within the last seven (7) years; 2) Associate degree in an animal related or animal behavior-related field plus two (2) years of experience in the care, feeding, and handling of a variety of exotic birds within the last seven (7) years; or 3) Four (4) years of experience in the care, feeding and handling of exotic birds within the last seven (7) years. Possession of a valid Colorado Class "R" driver's license at the end of probationary period. Salary \$25,080.00 - \$36,600.00. If you live outside the Denver Metro area, please call (720) 913-5618 to request an application and supplement through the mail, or apply on line at www.denvergov.org/jobs. Submit copy of college transcripts, application and supplement by **30 April 2000** to: Career Service Authority, 110 16th St., Denver, CO 80202-5206.

CARNIVORE KEEPER INTERN...six and twelve weeks internships available for applicants 18 years and older. Preference will be given to those pursuing degrees in animal science, zoology, biology, pre-vet and related fields. Interns gain experience in numerous aspects of carnivore husbandry. Species found at the Carnivore Preservation Trust include tigers, jaguars, leopards, snow leopards, clouded leopards, cougars, ocelots, caracals, servals, binturongs, kinkajous and a tayra. Internships are offered continuously. No stipend. Assistance in locating housing available. Please send letter/resumé to: Intern Program, Carnivore Preservation Trust, 1940 Hanks Chapel Road, Pittsboro, NC 27312; or fax (919) 542-4454. For more information, call (919) 542-4684 or e-mail: cptigers@mindspring.com\

ZOO KEEPER..Immediate Opening. Private, non-profit otter conservation facility for breeding and study programs, seeking dedicated individual for permanent position. Requires one (1) year experience with exotic animals - experience with mustelids preferred. Responsible for daily husbandry, maintenance of animals and grounds enclosures, diet preparation, and record keeping. Experience with animal restraint and blood drawing preferred. Must be physically strong (able to lift 50 lbs.) and work independently. 40-hour work week including some weekends and holidays. Benefits included. Send letter and resumé to: Otter Conservation Center, Inc., 250 Otter Conservation Rd., Statesboro, GA 30458. Resumés may be faxed to (912) 839-2551.

ZOOKEEPER...this is a full-time permanent position caring for a diverse collection of exotics and several domesticated species, emphasizing on birds. Involves daily husbandry, diet preparation, exhibit maintenance, assisting with the being involved with various veterinary procedures, and an opportunity to work with children and young adults in our zoo-crew program, and Science Focused High School here at the zoo. Experience in behavioral enrichment and operant conditioning techniques a plus. Smoke-free zoo. \$7.02/hr. to start. Health, dental, sick time, vacation time. Send letter, resumé and references to: Randy Scheer, Folsom Children's Zoo and Botanical Garden, 1222 S. 27th St., Lincoln, NE 685602. AZA accredited. 14 acres. Six full-time zoo keepers. **Position open until filled.**

ANIMAL KEEPER GUIDES...several positions available for seasonal employment May through Oct. Requires high school diploma, paid zoo experience preferred, but volunteer experience acceptable. Good opportunity to gain paid zoo experience. Applicants must have strong, audible voices, neat appearance, good personality, and must work well with co-workers as well as the public. Non smokers preferred. Duties include daily animal care and feeding, exhibit cleaning and maintenance, various other maintenance duties, and talking to groups in a tour situation. Must lecture on both venomous and non-venomous reptiles. Must have experience in handling non-venomous reptiles or a willingness to learn. Salary \$195.00 per week. Living quarters, utilities and uniforms furnished. No pets allowed. Send resume to Jim Miller, Soco Gardens Zoo, c/o 89 Evans Cove Rd., Maggie Valley, NC 28751. Filing deadline **25 April 2000**.

ANIMAL KEEPER...the Arizona-Sonora Desert Museum is developing a roster of qualified candidates to fill animal positions in the Department of Mammalogy and Ornithology. We expect to fill several full-time and part-time positions over the next year. Qualified applicants should have experience in animal care and the ability to work in a team environment. A college degree in biology or related field is preferred. Please send letter of interest and resumé to: Human Resources, Arizona-Sonora Desert Museum, 2021 N. Kinney Road, Tucson, AZ 85743; e-mail to: mbundy@desertmuseum.org; or fax to (520) 883-2500. EOE.

INTERNSHIPS...the SeaWorld Orlando Education Department has two unique Internship opportunities for college students. The Camp SeaWorld/Adventure Camp Internship provides an opportunity for students to work with SeaWorld's summer camp programs and is offered from May to August. The new Educator Internship which gives students the opportunity to staff various animal attractions and interact with park guests, is offered as a twelve-week Internship during the Spring, Summer and Fall semesters. Contact Jeannie.Thompson@anheuser-busch.com for information on the Camp SeaWorld Internship. Contact Geni.Garza@anheuser-busch.com for information about the Educator Internship. Check out <http://www.seaworld.org> for more information about either internship.

AVICULTURE INTERN...will receive intensive, hands-on training in the care and maintenance of a large bird collection. Will experience all aspects of bird husbandry including general cleaning, handling, incubation, record keeping, public education, etc. Seeking college students or recent graduates with an interest in avian management biology. Interns will work with the aviculturists for a three-month period. This is a volunteer position with on-site housing provided. Internships available year-round. Send a letter and resumé with references to: Tracy Aviary, 589 East 1300 South, Salt Lake City, UT 84105. ATTN: Kristine McCue/Holly Seitz.

INTERNSHIP...The Audubon Institute is offering a hands-on internship at the Species Survival Center. Interns will receive training in the care of endangered species such as antelope, birds and cats. Interns will participate in all aspects of animal maintenance and care; including the incubation and rearing of chicks, exhibit maintenance, animal enrichment program and general cleaning. Special opportunities exist to participate occasionally in laboratory and veterinary procedures. Seeking college students or graduates for a minimum of 10 weeks time. This is a voluntary internship position. Some on-site housing is available. Internships are given year-round. Transportation is necessary. For an application and more information, please contact Jackie Conlon, Audubon Center for Research of Endangered Species, 14001 River Road, New Orleans, LA 70131; phone (504) 398-3166; Fax (504) 398-3100; e-mail: lab@acres.org<

BIRD SHOW INTERN...Summer 2000. Two (2) positions available in Tracy Aviary's Bird Show. Interns will provide care and maintenance to a variety of bird species in the bird show collection. Participate in daily educational shows as well as perform behind the scenes support. Will handle many species for training and education. Interns must be outgoing with a good stage presence. Must be able to work in a fast-paced environment, and deal with a variety of situations. Familiar with positive reinforcement training techniques and behavioral enrichment a plus. Housing will be provided and a possible stipend for a three-month period. **Application deadline is 30 April 2000**. Send resumé to: Sharon Dale, Bird Show Manager, 589E 1300 S, Salt Lake City, UT 84105.

ANIMAL KEEPER...full-time position with benefits. Minimum requirements are high school diploma and two (2) years experience in a zoological institution or related field, college degree preferred. Will be responsible for collection animals at either the Nashville Zoo at Grassmere or Nashville Zoo Breeding and Quarantine facilities. General knowledge of mammal/avian husbandry and strong communication skills required, may specialize in a select order. Closing date 30 April 2000. Please send a letter of intent and resumé to: William B. Harris, Animal Husbandry Manager, Nashville Zoo at Grassmere, 3777 Nolensville Rd., Nashville, TN 37211 or Fax (615) 333-0728.

VETERINARY/LABORATORY TECHNICIAN...provides direct technical/medical support and assistance in the care and treatment of all animal species in the collection. Assists with immobilizations, surgeries, treatments, radiology, and the hand-rearing of

baby animals (as required). Processes samples and performs clinical laboratory testing with emphasis on parasitology, hematology, serology, microbiology, and water quality. Maintains physical facilities, equipment, records, and supplies associated with the treatment of collection animals. Requires a degree from an accredited Veterinary Technician program and a minimum of one (1) years clinical/exotic clinical experience. Microbiology, parasitology, and avian/reptile hematology experience preferred. Must be certified or eligible to be certified in PA. Schedule includes weekends and some flexibility is required. Send resumé to: HR, Philadelphia Zoo, 3400 Girard Ave., Philadelphia, PA 19104 or Fax to (215) 243-5219.

WILDLIFE PROGRAMS SUPERVISOR...The Living Desert is hiring a supervisor for its off/on grounds program section. Programs include year-round (weather permitting) amphitheater shows, in addition to frequent off-grounds programs, PR events and media events. Duties include but are not limited to: supervision, hiring of staff, training docents on animal handling, overseeing the care and training of Wildlife Programs and educational animals. Overseeing budget for program, scheduling, contracts, confirming and performing site inspections for off-grounds work. Creating new shows, scripts, and acting as relief supervisor for other areas in the Animal Department. Program animals include mammals, birds, and herps. Successful candidate must have a Bachelor's in related field, five (5) years related experience, one of which is in a supervisory capacity, excellent communication and organization skills. Previous show/teaching or public speaking experience a must. Send letter/resumé/references to: Amy Roberts, Animal Collection Manager, The Living Desert, 47-900 Portola Ave., Palm Desert, CA 92260; email address tldmamal@netscape.net\

INTERNSHIP...The Audubon Zoological Garden located in New Orleans, LA , is offering a summer internship in the Sea Lion Department. The internship is an unpaid position and housing is not provided. Applicants should be Juniors or Seniors in an undergraduate program, looking to explore the zoo keeping/animal training field. Performing the internship for college credit is strongly encouraged. The internship will last the duration of the summer, beginning in May/June and end in August. The intern will be requested to work 40-hour weeks, in eight-hour day shifts, with a willingness to work weekends. Audubon is looking for a committed, hard-working candidate with public speaking skills. The internship will involve conducting daily routines, performing public presentations, maintenance work, and may involve animal handling and swim skills. If interested, please submit resumé with cover letter and reference **by 15 May 2000** to: Suzanne Smith, Sr. Trainer, Sea Lions, Audubon Zoological Garden, P. O. Box 4327, New Orleans, LA 70178 or Fax to (504) 866-0819.

*Check AZA Member Institution job position listings
on the AZA Home Page: <http://www.aza.org>*

*Positions posted with AAZK, Inc. may also be found
on our website at www.aazk.org*

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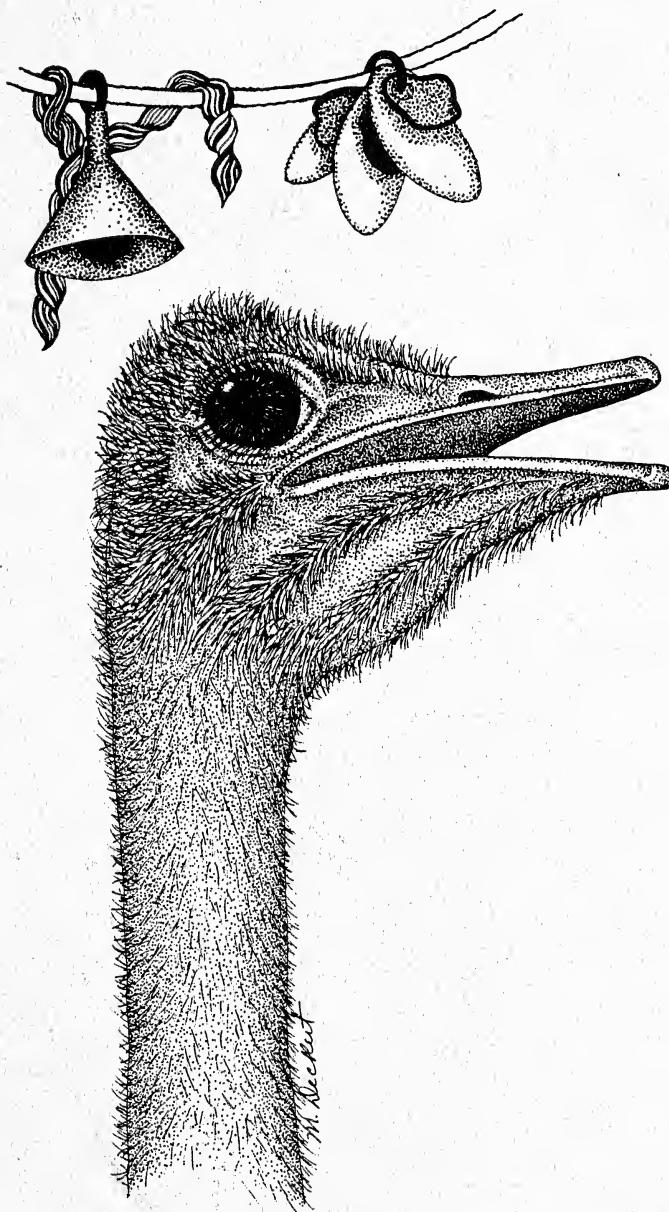


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ANIMAL KEEPERS' FORUM



**The Journal of the American
Association of Zoo Keepers, Inc.**

May 2000

Managing Editor: Susan D. Chan • **Associate Editors/Enrichment Options**

Coordinators: Gretchen Ziegler, Sequoia Park Zoo & Jan Roletto, Utah's Hogle Zoo • **Legislative Outlook**

Column Coordinator: Georgan B. Johnston, Sacramento, CA • **ABC's Column Coordinator:** Diana Guerrero, San Diego, CA • **Reactions Column Coordinator:** William K. Baker, Jr., Frank Buck Zoo, Gainesville, TX

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AAZK PUBLICATIONS - CONTINUING DATA COLLECTION

Zoo Infant Development Project - Nell Bekiaries, Southern Illinois University (Birds/Passerines)

Biological Values for Selected Mammals, 3rd Edition - Jan Reed-Smith, John Ball Zoo



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About the Cover.....

*This month's cover features an Ostrich (*Struthio camelus*) drawn by Mary Deckert, a Docent at the Los Angeles Zoo. This largest of the flightless ratites reaches a height of eight feet and may weigh up to 300 pounds. The species displays sexual dimorphism. Ostrich usually live in small groups consisting of a male and a few females. The females lay their eggs in the same nest and the male is actively involved in incubating and raising the young. The females produce one brood a year averaging 6-8 eggs. The diet of the ostrich, native to the savannas of Africa, consists of grasses, seeds, insects and also occasionally small animals. While the ostrich has atrophied wings and cannot fly, it makes up for this inability by its great running speed. An ostrich being chased can reach a speed of 40 mph with strides of over 12 feet. Ostrich thrive in captivity, and thus it is possible to raise them for their plumes. In the past decade, farming ostrich for their meat became fashionable, but to date ostrich meat has not found great favor with American palates. Thanks, Mary!*

Animal Keepers' Forum publishes original papers and news items of interest to the animal keeping profession. Non-members are welcome to submit articles for consideration. Articles should be typed or hand-printed and double-spaced. Authors are encouraged to submit their manuscripts on a disk as well as in hard copy form. Acceptable formats include: for Macintosh users - Microsoft Word or Works; IBM users - Word for Windows, WordPerfect or Wordstar. All illustrations, graphs, charts and tables should be clearly marked, in final form and should fit in a page size **no greater than 5.5" x 8.5"** (14cm x 22cm). Literature used should be cited in the text (Brown, 1986) and alphabetically in the final bibliography. Avoid footnotes. Include scientific name (as per ISIS) the first time an animal name is used. Thereafter use common name. Use metric system for weights and measurements (standard equivalents may be noted in parenthesis). Use the continental dating system (day-month-year). Times should be listed as per the 24-hour clock (0800, 1630 hrs. etc.). Glossy black and white or color prints (minimum size 3" x 5" [8cm x 14cm]) are accepted. Clearly marked captions should accompany photos. Please list photo credit on back of photo.

Articles sent to *Animal Keepers' Forum* will be reviewed by the editorial staff for publication. Articles of a research or technical nature will be submitted to one or more of the zoo professionals who serve as referees for *AKF*. No commitment is made to the author, but an effort will be made to publish articles as soon as possible. Lengthy articles may be separated into monthly installments at the discretion of the editor. The editor reserves the right to edit material without consultation unless approval is requested in writing by the author. Materials submitted will not be returned unless accompanied by a stamped, self-addressed, appropriately-sized envelope. Telephone and FAX contributions of late-breaking news or last-minute insertions are accepted as space allows. However, long articles must be sent by U.S. mail. Phone 1-800-242-4519 (US); 1-800-468-1966 (Canada); FAX (785) 273-1980.

**Deadline for each regular issue is the 10th of the preceding month.
Dedicated issues may have separate deadline dates
and will be noted by the editor.**

Articles printed do not necessarily reflect the opinions of the *AKF* staff or the American Association of Zoo Keepers, Inc. Publication does not indicate endorsement by the Association.

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**AAZK Website Address: www.aazk.org
Bulletin Board Access: type "aazk" in member name box;
type "Elvis" in password box.
BFR Website: <http://www.bfr.aazk.org>**

Scoops & Scuttlebutt



Chapters/Individuals Continue Support for AAZK, Inc.

The AAZK Board of Directors and the Administrative Office staff would like to thank the following AAZK Chapters and AAZK members for their recent donations in support of the Association and its programs and projects: Little Rock AAZK Chapter (Little Rock, AR) \$500.00 for the general operating budget; AAZK member William D. Pottorff, Cedar Cove Feline Conservation Park, Inc., \$100.00, undesignated. The Association would also like to thank Lisa Bousquet of the Roger Williams Park Zoo, Providence, RI, for her donation of an Iomega Zip Drive for use in backing up the AO computers.

We gratefully acknowledge the generous support of these Chapters and individuals in helping the Association carry out its mission.

AAZK Announces Availability of Two Different Granting Programs

The American Association of Zoo Keepers announces the availability of two granting opportunities:

The Conservation, Preservation and Restoration Grant - This \$1000.00 grant is designed to encourage and support efforts in conservation conducted by keepers and aquarists in zoological parks and aquariums around the world. Members of AAZK in good standing are eligible to apply and receive this grant. The member MUST have an active role in the conservation effort submitted for consideration.

The Zoo Keeper Grants in Research - Two \$750.00 grants are funded to encourage and support noninvasive research conducted by keepers in zoo and aquarium settings. The principal investigator MUST be a full-time keeper and a member in good standing of AAZK, Inc.

Deadline for application submission for either grant option is **31 May, 2000**. Successful grant recipients will be announced after the AAZK, Inc. National Conference in Columbus, OH. The grant cycle runs from 1 January 2000 to 31 December 2000.

For further information or application packet contact: Jan Reed-Smith, AAZK Grants Committee Chair, John Ball Zoo, 1300 W. Fulton Ave., Grand Rapids, MI 49504; e-mail: jrsotter@iserv.net; Fax - (616) 336-3709. Be certain to specify whether you are requesting information on CPR or Research Grants.

Calling All Cotton-Top Tamarins Trainers--We Know You Are Out There!

The Cotton-top Tamarin SSP is interested in starting a working group of cotton-top tamarin trainers. We are looking for keepers who are currently training their animals and those who are interested in doing so. We have a short survey to complete and are looking to begin compiling a "Train the Tamarin" manual. If you are interested in receiving the survey, participating in the cotton-top tamarin group, or are looking for help training your tamarins, please contact Michelle Farmerie at (412) 365-2385.

Input Sought on Wildlife Rehab Programs

Does your zoo have a wildlife rehabilitation program? If so, what types of native wildlife do you work with? Is the position a funded one or is it voluntary among keepers? I would like to put together a list of those institutions that have an active wildlife rehabilitation program. Please send responses to: Knox Martin, Coordinator, Raptor Rehabilitation, Memphis Zoo, 2000 Galloway, Memphis, TN 38112.

The AAZK International Outreach Committee Seeks Chapter Assistance

The International Outreach Committee is planning an international keeper meeting to take place at the National Conference in Columbus. This meeting follows the successful meeting that took place in November 1999 at Institut Rural de Carquefou in France. The ultimate goal of these meetings is to increase communication and cooperation among all the national keeper associations throughout the world.

Approximately 15 delegates from France, Germany, The Netherlands, United Kingdom, Australia and Spain are expected to attend. The IOC would like to return the gracious treatment it received in France and help cover some of the costs of these delegates. Many of these keepers will be attending at great expense and it is hoped that we can cover their lodging costs. It would be greatly appreciated if any Chapters are willing to make donations toward this event. If you have any questions, please contact Jeannette Beranger at (401) 785-3510 or IOCAAZK@aol.com, or Shane Good at (216) 661-6500 or sjg@clevelandmetroparks.com<

A Message from the L.I.N.K. Board Oversight

Dear Members,

As we move into the new century, advances in communication technologies will allow us new opportunities to share information. I would like to take advantage of this technology in restructuring the L.I.N.K. system. The original purpose of L.I.N.K. (Liaison and Information Network for Keepers) was to provide a system of essential communication between members, Chapters, Administarative Offices, and the Board of Directors. When it was formed in 1990, L.I.N.K. provided this service through a network of coordinators, councils, and liaisons; much of it through mail and telephone conversations. With the information age upon us, the need for many of these positions has become redundant. As the Board oversight of L.I.N.K., I am soliciting your thoughts and ideas on improving our Association's communication network. Please take time to review sections 7.01-1 through 7.01-11 in the Operations Manual and explore the AAZK website. If you have any questions, comments, or recommendations please contact me.

Sincerely,



Kevin R. Shelton
AAZK Board of Directors
KShelton@FLAquarium.org
(813) 273-4045



Coming Events

Fifth International Elephant Research Symposium (June 2-3) and the Second North American Conference on Elephant Foot Care and Pathology (June 4) Hosted by Oregon Zoo
For further information contact: Norie Dimeo-Ediger at (503) 220-5763, by fax at (503) 226-0074, or by e-mail: edigern@metro.dst.or.us<



Animal Trainers Network Workshop - June 11-13, 2000. Cincinnati Zoo. Early registration will be provided for those arriving on the evening of June 10. Interested parties, please contact Dawn Strasser, Cincinnati Zoo at (513) 281-4700 ext. 7710; Jane Anne Franklin, Louisville Zoo at (502) 459-2181; or Adriion & Valerie Haft, Cincinnati Zoo at (513) 281-4700 ext. 8356.

Animal Behavior Society Annual Meeting August 5-9, 2000 in Atlanta, GA, co-hosted by Morehouse College and Zoo Atlanta. Along with contributed talks and posters, the meetings will include special symposia on "Dispersal Behavior" and invited papers on "Comparison Between Primates and Cetaceans". Plenary speakers include Chris Boake, Hugh Drummond and Dee Boersma. For further info see: <http://www.animalbehavior.org/ABS/Program/>

21st Annual Conference of the Association of Avian Veterinarians (AAV) - Aug. 29- Sept. 2, 2000 in Portland, OR. To request a registration brochure, complete the form on the conference web page: www.conferenceoffice.com/aaiv

American Association of Zoo Veterinarians - Sept. 17-21, 2000 in New Orleans, LA, in conjunction with the International Association of Aquatic Animal Medicine. For additional information, please contact Wilbur Armand, VMD, Executive Director/AAZV, 6 North Pennell Rd., Media, PA 19063; Phone - (610) 892-4812; Fax - (610) 892-4813; or e-mail at 75634.235@compuserve.com<

Association of Zoological Horticulture Annual Conference - Sept. 30-October 4, 2000 in New York City. Will include study trips to Bronx Zoo and three other zoos as well as paper sessions; AZH 20th anniversary party; pre-conference tour to Longwood Gardens, Morris Arboretum and Philadelphia Zoo. For registration packet contact Rob Halpern, Bronx Zoo (718) 220-5164 or rhalpern@wcs.org

Elephant Managers International Conference - 6 - 9 October 2000 in Syracuse, NY. For more information please contact Adrienne Whiteley on: bpzoo@emi.com

Association of Zoo and Aquarium Docents (AZAD) - October 11-15, 2000 in Cincinnati, OH. Hosted by the Cincinnati Zoo. Interested parties should contact Norma Cole at 9419 177th Place NW #2, Redmond, WA 93052-6933 or at NicoleOrca@aol.com

Panda 2000 International Conference - October 16-19, 2000 in San Diego, CA. Hosted by Zoological Society of San Diego and World Wildlife Fund. A program consisting primarily of workshops, panel discussions and poster sessions is planned. Topics in conservation, education, training, research, health, reproduction, and captive management will be covered. For info contact Helena Fitch-Snyder, Zool. Soc. of San Diego, PO Box 120551, San Diego, CA 92112. Phone: (619) 557-3954, FAX: (619) 557-3959; E-mail: helena@sandiegozoo.org.

Carnivores 2000: A Conference on Predator Biology and Conservation in the 21st Century - November 12-15, 2000. Hosted by the Defenders of Wildlife at the Omni Interlocken Hotel in Denver, CO. For more information contact: Carnivores 2000, Defenders of Wildlife, 1101 14th St., NW, Washington, DC 20005 or call (202) 789-2844 ext. 315 or e-mail: nfascione@defenders.org<

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Racine Zoo
Racine, WI
Yvonne Strode, Curator

St. Louis Zoological Park
St. Louis, MO
Charles Hoessle, Director

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ABC'S

Animal Behavior Concerns & Solutions

A Question and Answer Forum for the Zoo Professional

By Diana Guerrero, Independent Behavior Consultant,
Ark Animals of California, San Diego, CA

Question

Malaysian Elephant Center. We were doing research on the subject of elephant training and were hoping that you could give us some input on the subject.

Answer

My responses to the questions submitted by this group have been included for review within this column. The questions submitted are in bold italics while my responses are in regular type.

Would you be willing to offer us some advice on this subject (elephant training)?

This is a bit difficult over distance and without video or knowing your background skills for training, but I'll do what I can. There are some contacts in Asia that I have included for you. Sally Walker would be valuable to you in that she is familiar with the mahout school, the prominent vets in the area and the NGO's (non-government organizations). Dr. Sukumar is another contact (He is THE Indian elephant guy) along with Dr. Krishnamurthy. Dr. Krishnamurthy was helping with the mahout school and does veterinary work on elephants all over different parts of Asia.

Also see the following elephant internet locations:

ABC's and Wildside for Elephant Management at
<http://www.arkanimals.com>

Elephant Social Styles (Elephant Managers Association)
<http://estel.uindy.edu/outReach/guestSchools/indyzoo/ema/ElephantSocialStyles.html>

Dan Koehl's Elephant Site:
<http://www.elephant.se>

Does using kindness and positive reinforcement yield effective results and obedient elephants?

Any good elephant management program will accomplish effective results and obedient/responsive elephants. Positive reinforcement is always used in every training program so I am not sure what you are referring to. Perhaps you are referring to the currently popular "protected contact" operant conditioning (OC) techniques and the marketing of "positive reinforcement methods?" EVERY form of training uses positive and negative reinforcement and many also use both positive and negative punishment.

Moving from one method (traditional) to another means that you will have to use much care and small simple steps so that the elephants and staff/volunteers are not confused.

Clear outlines of your steps, repercussions for misbehavior, rewards for correct behavior etc., have to be outlined. Loose animals within an enclosure can do well but also bring in challenges of altercations between animals, damage to the enclosure and danger to the staff members —so emergency strategies should be outlined prior to implementation.

Is an elephant hook necessary?

The elephant hook is correctly used as a stimulus or cue. Some prefer a stick or target, while traditional trainers tend to use a hook. Dealing with another culture and entrenched belief systems would probably benefit by your using their existing tools and introducing yours with sensitivity and respect. Weaning off one to another would probably be hard in the cultural situation you are in.

How does one establish “who’s boss” with the elephant?

HA! Can you really do such a thing?!Negotiations. The yielding to the line is one technique. You referred to chains being kept on the animals where you are and this is one of the reasons. (It is teaching the elephant that they cannot escape or kill the handler. You said that they call this “breaking the spirit” but the technique is used to prevent a variety of events.)

Usually trained elephants already in a working situation are used to help integrate newer elephants into training. Ropes, and other techniques are used to teach lie-downs etc. You can also use operant conditioning techniques that get cooperative behavior voluntarily.

The transition is going to be tricky if you decide to opt to move from one style of management to the other. It would not be feasible to use if you are going to be doing rides and interactions with a mahout managing the situation.

How many hours a day would have to be spent training each elephant?

Not hours at one time! Animals learn in short simple steps that may take a while. In general, shorter sessions (under an hour and around 15-20 minutes with some species) are better than long ones for the learning process. This would also depend on the behavioral training style you opt to use and what you are training. Sometimes the animal gets what you are attempting to teach and you end the session right then and there.

In OC methods you first teach what the secondary reinforcer is. Then you need to get the lightbulb turned on so the animal understands the concept of their good behavior is rewarded....i.e., they tolerate a human without showing pushing or aggression or they move to or away from the tool selected (target usually is moved toward; while hook means move away from the tip or hook).

Once the animal understands the rules, you can then begin to shape the behavior with small steps. YOUR outlines have to be clear. Then you can focus on multiple sessions to get the behaviors you need.

Although it would likely depend on the personality of each elephant, if two hours of training were given each day, how long (in general) would it take to train the elephant to a point where it could safely be used with the public?

Every animal is an individual and I don’t think you could actually give a specific “time” since the elephants age, experience, training skills, etc., would affect it just as much as

the skills of your training staff would. I would defer to one of my colleagues who has worked with free-ranging elephants and mahouts to answer this. (Referred out)

Are there any concerns regarding the safety of the staff during the training process?

Yes, very much so. Big animals can hurt you easily without even meaning to.

How will the fact that the elephants are used to being chained and then are allowed so much freedom affect their training?

It would depend on how you implement the program and what they have experienced or know already. To be successful, mental occupation would be critical and consistency would be also. In changing over from one style of training to another there are risks that occur since the animal “tests” to see the new parameters or rules. That is why things have to be very clear.

Can elephant training occur one-trainer-to-one-elephant or are a number of staff required for each elephant for each training session? We have also thought that one person from Team A and one person from Team B could be assigned to each elephant. Would this work in elephant training or would it confuse the elephant?

It is always good to work in teams. It is a good idea to handle the gaps/overlap with your A and B teams. When training a new behavior ONE trainer should accomplish and complete the training task with the animal. Once it is done then the other trainers can be taught how to get the same task by the main trainer. This helps with consistency (not predictability —see my website on this, too) which is one of your cornerstones for safety. This can work well if you are clear and consistent.

What else would enhance the elephant's training process and the level of learning and obedience?

Clear parameters, consistency, good leadership (human), cooperation, communication between all trainers. Training fairness and clarity with special attention to each animal's individual temperament and the herd dynamics if you have a group of animals living together.

If the Asian tradition of mahoutship is not necessarily the best way to go, are there certain aspects of their training methods that are effective and worth keeping?

All elephant training has evolved from the Asian tradition!. Each area of Asia differs and due to the economic and cultural transitions you probably are seeing the gross repercussions on the level of skill and commitment (or lack of) to the profession. Mahouts were once honored and revered and their training took a lifetime. Now their status has fallen greatly and many do not have the training or skills that once were so highly cherished. Each region of Asia has a wide degree of variables that come into play as well.

If using kindness and positive reinforcement as a way of training the elephants is an effective and a proven method, we would like to learn more about it.

I suspect you have not trained animals before and have heard of the “positive reinforcement” training. There is no such thing as *just* using positive reinforcement or kindness only. What I think you mean is that you want to bring the current practices up to focusing more on the positive so that the training becomes easier for the trainers and more positive for the animals.

Everything involves a repercussion or reinforcer, whether it is from the environment or training. The consequence (or lack of) is what shapes the behavior. Somewhere on middle ground is where you need to find yourself on this topic. Relationship training with positive reinforcement are tools. Not one is the “best” since it is proper implementation that gets good results.

(About the Author: Since 1978, ARKANIMALS.COM Director, Diana Guerrero has worked professionally in a variety of animal facilities. Attending and completing courses in both animal management and training from institutions both here in the United States and Europe, she has been affiliated with some of the best organizations. She is an alumni of The Moorpark College Exotic Animal Training & Management Program, The Gentle Jungle Animal Affection Training School, The International Training Centre at the Jersey Wildlife Preservation Trust, and special program extensions with Marwell Zoological Park and Kent University. Guerrero started her career in the marine mammal field working as a naturalist, and subsequently became involved with terrestrial animals in zoos and other facilities. Guerrero writes a variety of animal-related columns, including the popular series, Unusual Animal Careers and does seminars nationally. Watch for two of her book projects in the summers of 1999 and 2000! Questions for ABCs should be submitted to Diana directly via e-mail:> arkabc@arkanimals.com< or via regular mail to ARKANIMALS.COM, P.O. Box 1154, Escondido, CA 92033 USA.)

GREENlines Snipets.....

LYNX LISTED AS THREATENED: The FWS has finally listed the Canadian lynx (*Felis lynx canadensis*) in the lower 48 states as a threatened species. After numerous lawsuits and delays the listing is a step forward, but the nearly 20 years since the first listing petition in 1982 has resulted in the species becoming “perilously close to extinction.” Some conservationists are already saying that the final rule does not adequately ensure the “survival and recovery” of the lynx throughout significant parts of its range, especially for the highly imperiled populations in the Northeast, Great Lakes, Cascades and southern Rockies where an endangered listing was definitely warranted. In a related story the AP reports that 33 more Canadian lynx werereleased into remote areas of the San Juan Mountains of southwesternColorado in early April. The release targeted the same general area as 41lynx released last year in the hope of increasing the chances of thecats mating and establishing a permanent population.

--GREENlines Issue #1092 3/22/2000

TEN YEARS AND COUNTING FOR ORANG-UTANS: New data indicates that if “rain forest destruction continues at present levels,” orang-utans (*Pongo pygmaeus*) will be “extinct in the wild in 10 years,” says *The Guardian* 3/23. The new projections are “10 times quicker” than those made just a year and a half ago, and reflect losses of “about 1,000 a year” since 1998, in their primary habitat on the island of Sumatra. On Borneo, the only other island where orang-utans live in the wild their “population has almost halved since 1993. In response, conservationists are now lobbying for the orang-utans “immediate classification as critically endangered.” --GREENlines Issue #1100 4/3/2000

Legislative Update

*Compiled by Georgann Johnston
Legislative Advisor
Sacramento, CA*



CITES Parties Meeting in Nairobi

As this issue of *AKF* was going to press, representatives from 150 nations were gathering in Nairobi, Kenya for the 11th Conference of Parties of the Convention on International Trade in Endangered Species in Wild Fauna and Flora (CITES). These bi-annual conferences are scientific in nature, wading through tons of documentation to reach considered verdicts on whether or not certain animal and plant species require protection. Proposals to the Convention to protect species can take many years to prepare.

Among the key issues to be discussed at the 2000 gathering was a proposal by Kenya and India to reverse a policy agreed to at the last conference in 1997 to relax the total ban on sales of African elephant products. Kenya says that reopening the ivory trade has "led to a dramatic increase in poaching". Zimbabwe, Namibia and Botswana want to expand the ivory trade and another country, South Africa, wants to downlist its elephants to begin trading. The U.S. has not taken a position on whether all African elephants should receive Appendix I listing, the highest level of protection. The fate of the species will in many ways be sealed by the decisions made at this meeting.

However, the U.S. has come out in strong opposition to a proposal by Norway and Japan to downlist Pacific gray whales and minke whales. A proposal to list giant sharks, including great whites, basking, and whale sharks was expected to be pushed by the U.S. with support from Kenya, Australia, Britain and Ireland. The U.S. was also expected to oppose a proposal by Cuba and the Dominican Republic for the downlisting of hawksbill sea turtles to open the hawksbill shell trade.

The proposed U.S. negotiating positions are available on the U.S. Fish and Wildlife Service website at: <http://international/fws.gov/fedreg/frforres.html>

Another controversial item on this meeting's agenda is an attempt by Spain and the CITES secretariat to impose a "gag rule" on participation by non-governmental organizations at the meeting. According to the proposal any NGO that "abuses or vilifies" a Party to the conference can be banned.

Pretoria-based published WildNet Africa has established a website dedicated to the CITES meeting. The website enables the visitor to become fully informed on the issues at hand. There are also easily accessible links to media releases, new articles and other on-line resources, as well as information from the previous meeting, COP-10, which was held in Harare, Zimbabwe in 1997.

The CITES website can be found at [wildnetafrica.com/cites](http://www.wildnetafrica.com/cites)

Source: Editor's note: the above excerpted from news releases from the USFWS, WildNet Africa and GREENlines. The website for WildNet Africa is: <http://www.wildnetafrica.com>

Stork Brings First Wild Whoopers In 60 Years

A pair of whooping cranes just hatched on central Florida's Kissimmee Prairie are the first born wild in the U.S. in 60 years, says the *St. Petersburg Times* 3/30. Conservationists' excitement was "tempered" by the realization that predators would probably eat them before they're two weeks old, "but it wasn't snakes and alligators that put the whooping crane on the endangered list." Once numbering in the thousands, "by 1938 only two small flocks remained" mainly due to the loss of wetland and prairie habitat. Source: GREENlines Issue #1099 3/31/2000

Wild-Caught Condor Free at Last

"Captured to help save her species from extinction," after 14 years Adult Condor No.8 has finally "spread her wings and soared to freedom," says a recent Associated Press release. Back in 1986, AC-8 was the last female and one of only six California condors living in the wild, and during her captivity she produced 12 offspring. Two younger condors hatched in captivity were also released into the Sespe Condor Sanctuary and it is hoped that AC-8 can teach them "traditional behaviors of a wild condor." This release brings the number of condors in the wilds of California and Arizona to 49 and raises optimism that in several years the condors could once again be "hatching in the wild" for the first time in decades .Source: GREENlines Issue # 1103 4/6/2000

Petition Seeks ESA Status for Spotted Owl

The Associated Press has reported that the Sierra Nevada Forest Protection Campaign has petitioned the FWS to list the California spotted owl under the ESA. . The environmental coalition says that owl numbers are "dropping 7% to 10% per year" and with the Forest Service not doing enough to protect its old growth habitat the owl could go extinct in 10 to 20 years. The northern and Mexican spotted owls are already listed in neighboring states and old growth forests in CA are "all but gone" from private lands and "disappearing rapidly from public lands." Source: GREENlines Issue # 1104 4/7/2000

Zoonosis Websites To Check Out

Daniel Shapiro's Zoonosis Web Page
<http://medicine.bu.edu/dshapiro/zoo1.htm>

Zoonosis Control
<http://198.151.150.133/zoonosis/zoonosis.html>

Feline Zoonosis - Part 1
<http://www.users.dmi.com/castlkat/cfj-zoon.htm>

Feline Zoonosis - Part 2
<http://www.users.dmi.com/castlkat/zoon2.htm>

Reptile Zoonosis
<http://www.hvzb.com.br/repteis/repzoon.htm>

Amphibian Zoonosis
<http://www.hvzb.com.br/anfibios/anfibzoon.htm>

Borna Virus
<http://horsetalk.co.nz/health/killer.htm>

Source: *ZooNews Digest* #98-5



REACTIONS

A Question and Answer Forum for the Zoo Professional on Crisis Management

By William K. Baker, Jr., Zoo Curator

Frank Buck Zoo, Gainesville, TX

Question

What options are available for crisis and safety training?

It may seem surprising, but training is readily available, the trick is making the connection. Within your local community is the first place to start the search.

Local Resources

Training is often available in your own backyard. There may be people in your very own department with the appropriate skills or training to put on a safety workshop. It's just a matter of asking around. When you get the opportunity to take a class that is departmental sponsored, jump on it. This means paying attention to those memos that make their way into your mailbox.

Within your municipal infrastructure the Human Resources Department is an excellent place to begin resourcing what is available in your area for training options. HR professionals know that trained employees are typically safer and this in turn lowers On the Job Injuries and conversely insurance rates. Fewer claims, lower rates. Options would include local or even regional workshops sponsored by municipalities.

Your local fire department or Fire Marshal is another resource. Typically they can point the way for CPR or First Aid training. These courses tend to be offered on a quarterly basis. Also, they typically offer annual courses in fire safety, extinguisher usage, and fire prevention. Another often overlooked type of training that fire departments often offer is Haz-mat: in short, the handling and response to hazardous materials. This could be an invaluable skill when considering that many zoological institutions handle chemicals and reagents for maintaining exhibits and aquatic systems. In conjunction with a Haz-mat course, SCBA, (Self Contained Breathing Apparatus) training is often offered. This allows emergency responders to react to a crisis in hazardous environments to rescue or even resolve a problem.

Water safety, life saving, and SCUBA training are skills that should be part of any crisis manager's repertoire. Basic water safety and life saving skills are available in many cases through the local YMCA and Red Cross Chapters. SCUBA certification is available through PADI, NAUI, YMCA, and SSI, all of which have good reputations. Advanced training is available in numerous specialty areas including Medic First Aid. A combination of training in first aid, life saving, and barotrauma treatment for first responders in the field, this course should be a must for those who work in aquatic environments. Oxygen provider courses are available through the Divers Alert Network, (DAN) and are highly

respected in scuba diving circles. Cylinder inspection courses and equipment specialty courses can provide a facility and its staff with the ability to troubleshoot and maintain equipment in house, saving time, money, and possibly even lives.

An invaluable resource for emergency training is your local Red Cross Chapter. Their instructors can provide an incredible diversity of training in CPR, First Aid, emergency management, and emergency relief services. The Red Cross provides not only the opportunity for training, but for contacts that can help with networking to other resources. Also, these are people that you will be interacting with in a major disaster. Animal Rescue groups can provide invaluable assistance, training, and technical support based on their experience. These individuals can provide a wealth of knowledge, not to mention an extended support system.

Your local police department, sheriff's office, or if you're near a military post, firearms training is just around the corner. Most professionals in the law enforcement or military community are more than willing to lend a hand with the development of a firearms program or its fine tuning for that matter. In many cases they can provide a firing range, personnel, and technical support. Another resource is tapping Firearms Instructors from the National Rifle Association who can provide training in firearms safety and marksmanship. Numerous states also offer Hunter Safety courses, which can be applicable to a zoological facility's training schedule.

Regional

Within your particular region there will undoubtedly be workshops held for training in animal management. These can easily be located in trade and scientific journals such as the *Animal Keeper's Forum* and the *AZA Communiqué*. If you think about it for a moment it makes perfect sense. We manage animals for a living, so any type of training that enables us to better understand our charges enhances our abilities to handle them in a crisis management situation. The various management schools held by the *AZA* provide not only an invaluable service to the zoological community, but an opportunity for fellow professionals to dialogue and exchange ideas.

Regional or national conferences are often a good place to pick up information, training, and exposure to new ideas in the form of papers, presentations, and round table sessions. Peer exchange of knowledge should never be underestimated. Now enters the information age and with the Internet, the exchange of new ideas takes a quantum leap forward. Access to materials and resources is now easier than ever.

Still, sometimes the best way to find a new idea "is to read an old book". The best resource that a zoological professional has at their disposal is their own mind.

Next Month: What steps should you take once a dangerous animal escape has taken place?

If you would like to submit a question for this column or have comments on previously published materials, please send them to: AAZK, Inc., 3601 S.W. 29th St., Suite 133, Topeka, KS 66614 Attn: Reactions/AKF.

(About the Author: Since 1985 Bill has been active in the fields of science, zoology and wildlife management. His education and experience include a B.S. in wildlife management and post-graduate studies in zoology, Lab and Museum Assistant, Shoot Team Leader, ERT Member, Large Mammal Keeper, Senior Keeper, and Zoo Curator at various zoological facilities. His area of research is crisis management in zoological institutions, which draws upon practical experiences and training as a Rescue Diver, Hunter Safety Instructor, NRA Firearms Instructor, and Red Cross CPR/First Aid Instructor.)

Making Conservation a Reality: Prairie Restoration at the Rocky Mountain Arsenal National Wildlife Refuge in Denver, Colorado

Dolly Crawford, Zoologist and Ecologist
former Zoo Keeper at Denver Zoological Gardens
and member of Rocky Mountain AAZK Chapter
and

Michelle Clendinin, Botanist
Rocky Mountain Arsenal National Wildlife Refuge, USFWS, Denver, CO

(Editor's Note: This paper was presented at the 1999 AAZK National Conference in Portland, OR, but was inadvertently not published in the 1999 Conference Proceedings.)

Grasslands are the single largest ecosystem in North America. Before the onset of agronomy in the early 1830's, approximately 162 million hectares (over 400 million acres) of prairie covered the Great Plains (Samson and Knopf, 1994). At this time, the three North American prairie types extended from Canada south to Texas and east from the Rocky Mountain foothills to Illinois. These native grasslands were home to a diverse assemblage of herbivores and their predators. Animals such as the elk (*Cervus elaphus*), pronghorn (*Antilocapra americana*), prairie dog (*Cynomys*, spp.) bison (*Bison bison*), prairie chickens (*Tympanuchus*, spp.) and the gray wolf (*Canis lupus*) were commonly seen by early settlers.

Today grasslands in North America have been dramatically altered. Tallgrass prairie cover of the eastern plains has declined by as much as 82-99% (Samson and Knopf, 1994). Mid-continental mixed-grass prairie has declined from 30% in Texas to 99% in Manitoba, Canada. Meanwhile, shortgrass prairie of the Western states has been reduced to 20% of its former cover in Wyoming and 85% in Saskatchewan, Canada (Samson and Knopf, 1994). Nature Conservancy estimates of shortgrass prairie decline in Colorado are 60% (Betsy Neely, pers. comm.). Concurrent with these reductions in grassland distribution are the loss of biodiversity. When prairie is disturbed, native vegetation such as grama grasses (*Bouteloua*, sp.) are outcompeted by exotics such as musk thistle (*Carduus nutans*), brome grass (*Bromus*, spp.), and Russian thistle (*Salsola iberica*) (Weaver, 1954).

Wildlife species are also affected. Gray wolf and elk were exterminated from North American grasslands by the early 1900's (Allen, 1967). Bison herds numbering approximately 70,000 today are restricted mainly to parks and preserves of the U.S. and Canada. Avian species of the prairie are also in decline. Of these, the decline of our species of prairie chicken (*Typanuchus*, spp.) is noteworthy. Hunting and habitat fragmentation have led to the extinction of the heath hen (*Typanuchus*, sp.), and the endangered status of the Attwater's prairie chicken and the lesser prairie chicken (*Typanuchus pallidicinctus*) (Allen, 1967). Even the once ubiquitous black-tailed prairie dog (*Cynomys ludovicianus*) is now confined to 2% of its former range (Marsh, 1984).

Due to these and other factors, conservation of North American grasslands has become a new imperative (Samson and Knopf, 1994). Many authors acknowledge the loss of prairie biodiversity (Knopf, 1992; Manning, 1995; Weaver, 1954). Threats to the integrity

of grassland systems include overgrazing, tilling, development and pollution (Cushman and Jones, 1988). Effects of development on prairie land are twofold; the introduction of trees and the fire suppression (Bock and Bock, 1995). Samson and Knopf (1994) recognize seven considerations in grassland conservation including identification and preservation of prairie endemics. In 1997 and 1998, zoo keepers from the Rocky Mountain Chapter of AAZK participated in a volunteer collaboration with the U.S. Fish & Wildlife Service to preserve and restore native prairie habitat at the Rocky Mountain Arsenal Wildlife Refuge in Denver, CO.

The Refuge

Prior to its designation as a National Wildlife Refuge in 1992, the Rocky Mountain Arsenal (hereafter call "the Refuge") was a farming community before 1942 and later a munitions production facility during World War II. Although much of its 17,000 acres have been altered, the Refuge still contains fragments of native grassland habitat. Also, the Refuge contains breeding populations of bald eagle (*Haliaeetus leucocephalus*); black-tailed prairie dogs (*C. ludovicianus*) and burrowing owls (*Athene cunicularia*).

As part of the Refuge Goals and Objectives (YFWS, 1996), management of wildlife and habitat became a priority to the ecological health of the Refuge. The Refuge actively sought the participation of volunteer groups to implement some small-scale conservation projects. Meanwhile, Rocky Mountain AAZK members were discussing options for volunteering in a local conservation project. A local volunteer newsletter (Volunteers For Outdoor Colorado) advertised projects at the Refuge and contacts between zoo keepers and the Refuge were established. The Denver Zoo supported this effort by providing the use of a zoo van to transport volunteers to and from the Refuge which is approximately 12 miles northeast of the zoo. Rocky Mountain AAZK members participated in three conservation projects during 1997 and 1998.

The Conservation Project

In the spring of 1997, zoo keepers volunteered approximately 50 hours to install cultivated buffalo grass (*Buchloe dactyloides*) over the site of a former swimming pool. The planted area measured about 24m x 18m (80' x 60'). Buffalo grass was delivered to the site in large rolls which were carefully laid out by the volunteers. Woven into the grass were additional prairie species which later germinated. Today this area is rich in native plant life.

In the summer of 1997, zoo keepers volunteered approximately 56 hours to restore prairie habitat to high visibility areas around the visitors Center at the Refuge. These restoration projects were integral to the education of visitors concerning the importance of native grassland habitat. Restoration within these areas included vast gardens of native plant assemblages and signs depicting species identification. This enables visitors to take self-guided tours of grassland habitat native to Colorado.

During the fall of 1997, zoo keepers volunteered to collect native seed when the indigenous vegetation had ceased flowering. Plant species represented in this project included blanket flower (*Gallardia aristata*), prairie coneflower (*Ratibida columnifera*), lupine (*Lupinus argenteus*), and grama grasses (*Bouteloua*, sp.). These seeds were packages and labeled for storage. The Refuge staff routinely banks all their collected seed as part of their preservation efforts. These seeds are then used in future restoration projects. Zoo keepers also replanted bare or disturbed areas with seed collected in previous years. Site preparation included removal of non-native vegetation, tilling and soil conditioning. The area was then heavily seeded and watered by underground irrigation.

In the Spring of 1998, the Refuge staff contacted the Rocky Mountain Chapter of AAZK

to help another prairie restoration project adjacent to the Visitors center. Zoo keepers contributed over 50 hours of volunteer time to restore an area approximately 24.3m x 12m (80' x 40'). Over 400 native plants including prairie sagebrush (*Artemisia ludoviciana*), locoweed (*Oxytropis sericea*), spotted gayfeather (*Liatris punctata*), prairie cinquefoil (*Potentilla pensylvanicus*), western wallflower (*Erysimum aspersum*), and broom snakeweed (*Gutierrezia sarothrae*) were planted at this time. Following this planting, the area was heavily seeded with grasses such as grama, buffalo grass, bluestem (*Andropogon*, sp.) and switchgrass (*Panicum virgatum*). Wildlife now rely on these plants for both food and shelter. Visitors to the Refuge have benefited from this area in learning about native Colorado prairie.

Already restoration of prairie habitat at the Refuge has resulted in the rebirth of an ecosystem. Herbivores such as prairie dogs, mule and white-tailed deer (*Odocoileus*, spp.), cottontail (*Sylvilagus*, spp.), and rodent species (*Peromyscus*, spp., *Microtus*, spp.) have returned in increasing numbers. Likewise, predator species such as the Swainson's hawk (*Buteo swainsoni*), ferruginous hawk (*Buteo regalis*), and coyote (*Canis latrans*) have increased in occurrence. Numerous sightings of monarch and swallowtail butterflies (*Lepidoptera*, spp.) at some of the showier plant species have also enhanced the restored areas.

Conclusion

Prairie conservation at the Rocky Mountain Arsenal National Wildlife Refuge illustrated some important points concerning grassland conservation in North America. First, restoration of damaged prairie habitat is not impossible. Given adequate manpower to replant and manage conservation areas, long-term success can be achieved. Second, prairie restoration at a small scale is not expensive. Combined, these conservation projects at the Refuge cost a total of \$500.00 which is well within the range of most zoological affiliations. Third, conservation projects at the scale described in this paper have not been possible without the assistance of volunteer groups such as Rocky Mountain AAZK. lastly, conservation efforts by groups such as AAZK Chapters benefits morale, is logically feasible and encourages learning. many zoo keepers who would otherwise be unable to share experiences with their co-workers due to scheduling and other difficulties may benefit from a group conservation project.

Conservation of North American grasslands should be an ecological priority. Threats including overgrazing, development and tilling are quickly changing the natural condition of the prairie with a concurrent loss of biodiversity. Projects such as described here afford each of us an opportunity to preserve grassland habitat for wildlife in the new millennium and beyond.

Acknowledgments

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By *Gretchen Ziegler, Sequoia Park Zoo
and Jan Roletto, Utah's Hogle Zoo*

It is remarkable how some trends come full circle in the zoo business. Just a few short years ago carcass feeding in U.S. zoos was practically unheard-of. But before processed zoo diets became so popular in the 70's, carcass meat in one form or another was the only diet fed to carnivores. Happily, we now hear of a growing number of zoos joining the ranks of those who offer their carnivores something more than ground meat that comes frozen in a loaf.

These lucky carcass-fed carnivores now enjoy such advantages as:

- **More time spent eating**

Depending on the complexity of the cut, carnivores can spend hours working a meat-on-the-bone piece, compared to minutes (or more often, seconds) to consume ground meat.

- **Use of entire mouth, and claws**

Whole meat consumption requires the use of all the teeth, the gums, the tongue, and even the claws, enabling carnivores to make use of the equipment they evolved with.

- **Control over where to eat**

When dinner is all in one piece, animals can carry or drag it with their teeth to wherever in their enclosures they choose to eat. This is especially useful for animals who feel insecure over the presence of neighbors, etc.

- **Excitement**

Of course most carnivores will show excitement over food in any form. But from a keeper's subjective view, animals certainly seem to get 'more involved' with carcass meat than they do with meat loaf.

- **Grooming behaviors**

After working on a juicy piece of meat, felines will usually spend time grooming the blood off face, paws, and even conspecifics.

- **Oral health**

Many keepers and vets have seen for years that carnivores fed whole meat/bones have cleaner and healthier teeth/gums compared to carnivores fed an over-processed diet alone.

- **Teaching visitors a more realistic picture of natural behavior**

An advantage enjoyed by zoo staff and the visitors they serve. The vast majority of visitors truly seem to enjoy and appreciate witnessing natural feeding behaviors of carnivores.

Unfortunately, there are some disadvantages associated with carcass feeding that still

keep many zoos from employing this wonderful enrichment technique, such as:

- **Anticipated negative visitor perception**

According to zoos that regularly feed carcass meat, this fear is largely unfounded. But for nervous managers, carcass meat can be processed enough to remove such features as hide, hooves, tails, etc.

- **Fear of health threats**

Again, according to zoos that have fed carcass meat for years, problems such as disease, or gut impaction/perforation is extremely rare. Several precautions can be taken to lower risks even further, such as source evaluation, inspection, freezing, and removal of skin/entrails. **One important note: when feeding a diet of muscle meat only, diets must be supplemented with a form of calcium to prevent nutritional imbalance.

- **Impracticality**

This factor may be the most likely barrier for most zoos, since few are equipped with butchering facilities. However, sources of processed carcass meat are available. Local livestock processing companies can be a good source. There is also a new company called L & J Livestock that now offers zoos a variety of cuts and sizes of whole meat from a livestock plant using quality control measures. The product comes packaged and delivered frozen, making it easy to store and use. (See advertisement in this issue.)

As carcass-feeding becomes more common, obstacles and impedance are diminishing. Having a company marketing such products should make it even easier for zoos to implement carcass-feeding, at least occasionally. If your zoo hasn't tried this excellent enrichment opportunity yet, now may be a good time to explore the possibilities.

We would love to hear about your experiences and/or opinions regarding carcass-feeding to zoo carnivores. How long has your zoo been offering carcass meat, to what animals? What problems and benefits have you encountered? We look forward to hearing from you and continuing this subject in future columns. —Eds.

(Ideas appearing in this column have not necessarily been tested by the editors for safety considerations. Always think ahead and use good judgement when trying new ideas. Eds.)

You are invited to submit material for the Enrichment Options Column. This might include recipes, toys, puzzle feeders, olfactory enrichment ideas, etc. Drawings and photos of enrichments are encouraged. Send to: AKF/Enrichment Options, 3601 S.W. 29th St., Suite 133, Topeka, KS 66614.

Visit the new AAZK Enrichment Website - www.enrich.org/aazk or to join the Enrichment Listserve by e-mail jackbell@humboldt1.com

An archive of past postings can be viewed at www.caza.org/enrich.

Conditioning Three Species of Aridland Antelopes for Weight Collection - A Case Study on Hippotraginae

By

Joseph Robertia, Jason Saucedo, and Rochelle Willison,

Animal Keepers

Dallas Zoo, Dallas, TX.

Introduction

There is a critical need for all zoological parks to begin publishing weight data for healthy ungulates in their collections so that a reliable information source can be developed (Fischer et. al., 1993). Regular measure of weight provides an excellent way of monitoring individual animal health, and can reveal fluctuations that give an early indication of illness or suboptimal management (Kirkwood & Mace, 1996). When dealing with species as intensely managed as the Arabian oryx (*Oryx leucoryx*), the Scimitar-horned oryx (*Oryx dammah*), and the Addax (*Addax nasomaculatus*), the ability to collect and monitor weights can be a useful management tool.

There is some information available, however the data are restricted to a few body weight measurements; our knowledge of other aspects of growth and development is limited (Kirkwood & Mace, 1996). As more data becomes available, it will be possible to compare growth rates of individuals reared at different zoos and to relate variation to differences in management practices, and thus to provide criteria with which to evaluate management (Kirkwood & Mace, 1996).

Two of these three species are already extinct in the wild, the Arabian oryx in 1972 (Henderson, 1974; Dolan, 1976; Price, 1986; Abu-Zinada et al., 1988;), and the Scimitar-horned oryx in 1998 (East, 1998). The Addax, listed as critically endangered in the IUCN Red Data Book, still occurs in small numbers in the deserts of North Africa. Only the inaccessibility of its last desert refuges has prevented the addax from becoming extinct; however, it is this same remoteness and inaccessibility that make effective protection unlikely to be feasible (East, 1998). The dramatic decline of these magnificent species can be attributed to several factors including indiscriminate hunting, habitat degradation due to overgrazing by introduced livestock, the subsequent introduction of livestock diseases, prolonged droughts, and political unrest (Asa et al., 1996; Correll, 1989). All three species have been, and continue to be managed in AZA Species Survival Plans. In 1999 the SSP's were combined with the sub-Saharan oryx group to form the AZA Antelope TAG's first Multiple-taxa Management Group (MMG).

Routine weight collection could aid in dietary formulation and evaluation. Body weight is an indicator of an animal's overall physical condition and an important datum used in making informed decisions concerning specific husbandry regimes, such as diet and activity patterns (Terranova & Coffman, 1997). With the ability to track weights, trends will more readily present themselves, and norms can be established. Deviations from the normal body weight can then be determined, and the affects corrected or compensated for. By detecting the variances at an early stage, rather than when an animal is either emaciated or obese, optimal weights can be maintained with subtle diet manipulations.

The ability to track weights could also provide much needed data on infant growth and development. There currently are few publications that catalogue or compare calf weights after 24 hours of age. There are data available on rates of growth for Arabian oryx (Flamand, Delahomme, & Ancrenaz, 1994), Addax (Markham & Kirkwood, 1988), and Scimitar-horned oryx (Mayor, 1984), but the data are only representative of hand-reared animals. All three of these species are represented in the *AAZK Zoo Infant Development Notebook* (1994). However, the data provided by this compendium are limited due to several factors including small sample sizes, several calves being hand-raised, and both lengthy and sporadic intervals between the dates of weight collection. With information on this subject being sparse for all but a few of the 4000 or so mammal species (Markham & Kirkwood, 1988), any contribution regarding rates of growth, patterns of weight gain, or degrees of calf development could prove advantageous to zoo managers caring for these species. Knowledge of growth, development, and food requirements in relation to management regime are vital for sensible attempts to improve the survival of young (Kirkwood & Mace, 1996).

The ability to obtain an animal's weight also has applications for veterinary care. These three species of antelope are difficult and dangerous to restrain manually owing to their aggressive tendencies, large body size, and long rapier-like horns (Kock & Hawkey, 1988). Having either an exact or a mean body weight can lend to smoother, more successful chemical immobilizations. Ill or injured animals can have their rate of dehabilitation or rehabilitation monitored via body weight. Also, more precise dosages of medication can be administered.

Historically at the Dallas Zoo, the collection of an animal's weight was done by using large, heavy, industrial scales that were designed to be stationary. These scales proved to be very difficult to move. In addition, weights were not collected on any regular schedule or at any predictable interval, but rather when opportunities presented themselves. As would be expected, this typically corresponded with veterinary examinations. This system, although effective, had several obvious drawbacks. The primary problem being that the animals could not be weighed until they were immobilized, and since chemical immobilization involves knowing the animal's weight, it became a Catch-22. This was usually resolved by making an approximation of the animal's weight and hoping for the best results. However, extrapolating an animal's weight can often be difficult. Another problem with this method was that obtaining weights during veterinary procedures often produced data that was biased towards lower-than-normal weights (Fischer et al., 1993). This was due to the probability that animals involved in veterinary procedures were already in a state of decline, debilitated health, or displayed an anorectic appearance.

The alternative to this method involved the capture and restraint of applicable species (Figure 1). Restrained animals were carried, or in some cases dragged on to a scale. In addition to the danger involved to both staff and animals, it is probable that this method also caused undo stress to the animals.

Material And Methods

With the acquisition of more advanced scales it has become possible to regularly collect weights from these three species of antelope and several other ungulates in the Dallas Zoo collection. Weights were obtained using the Weigh-Tronix Inc. Alley Weigh™ scale with the Model 615 digital indicator. The portability and convenience of this scale is exceptionally good. The deck dimensions are 50.8cm x 127cm (20" x 50"), the overall height is 3.94cm (1.75"), and the entire scale only weighs 121kg (55 lbs.). The capacity of the scale is 2,200kg (1,000 lbs.). The scale also features a non-skid, granular surface to prevent slips or falls. There are adjustable footpads that can be adjusted to compensate for uneven surfaces. A 2.13m (7') cable connects the scale to the indicator.



Figure 1. The “old way” of obtaining an animal’s weight was during captures or chemical immobilizations. (Photo by Kelly Lorenz)

The first stage of conditioning the animals involved designating feed stations. The animals had previously been fed free choice coastal Bermuda grass from multiple hayracks in various locations, and received their daily, morning grain rations in feed bowls randomly distributed throughout the exhibit. This was done for enrichment purposes, as food distribution has been shown to influence behavior of captive antelope (Ganslosser & Brunner, 1997). However, for conditioning purposes this was changed. In choosing the feed stations, careful consideration was taken to find an area that was both comfortable to the animals and accessible to the keepers. For the oryx, hay provisions were consolidated to one hayrack on one end of the exhibit. Observations were made to be certain that all animals were getting equal access to the hayrack and that no aggression over the feed station developed. The daily grain rations continued to be fed in the morning, but bowls were placed in designated areas along a fence line (Figure 2). This was at the opposite end of the exhibit from the hayrack. Also, it should be pointed out that when being fed in this manner, the oryx almost always line up to the feed bowls in their sequential order in the dominance hierarchy. What this means is where the first bowl is placed, the alpha animal will go, where the second bowl is placed, the beta animal will go, etc. This proved useful when it came time to gather the weights of each animal. By manipulating the order in which feed bowls were placed, a specific animal could be expected to occupy a predetermined spot based on its status in the hierarchy. In doing so, every animal’s weight could be obtained without moving the scale.

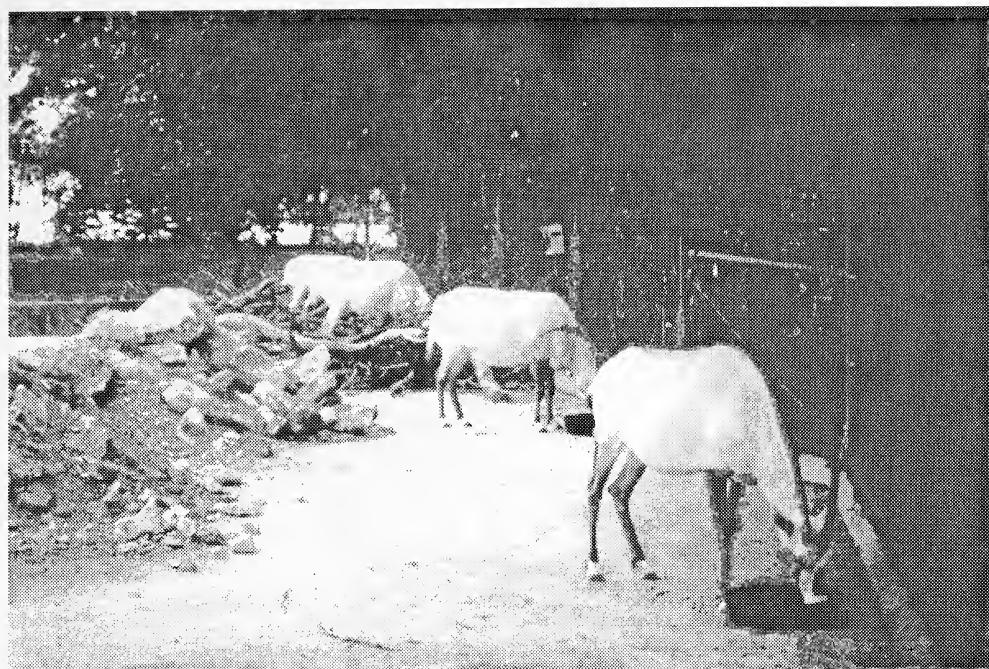


Figure 2. Arabian oryx herd consuming their morning grain at designated feed stations. (Photo by Joseph Robteria)

This method, although effective with the oryx, was not feasible with the addax. Due to difficulties with their exhibit design and lack of motivation for pelleted grain, a slightly different approach had to be taken. It was a real challenge to find a food item that would entice the addax. Although a variety of items were offered to the animals initially, most were of no incentive to them. Coastal Bermuda grass was the only food that the animals responded to. It was decided to consolidate hay to only two racks that hung side-by-side. This became their feed station.

The second stage of conditioning involved utilizing environmental prompts. An environmental prompt involves adding or removing a stimulus to increase the likelihood of getting a correct response (Burch & Baily, 1999). For our prompts we constructed "feed chutes" that served to guide the animals directly to their feed bowls. The design of the chutes varied between the three species, but all of them had the same effect of channeling the animal in between two barriers. This barrier not only aligned the animal in a specific area, but also prevented them from gaining access to the feed bowls from outside the chute.

For the Arabian oryx, piling up large amounts of deadfall created chutes. Deadfall was chosen for several reasons. The principal reason being that the oryx were already accustomed to the branches as a part of their exhibit furnishings. Large deadfall piles serve both as "run-arounds" and visual barriers. Also, deadfall chutes were utilized to retain more natural aesthetics within the exhibit. They could be left in place without drawing attention from patrons in the way that a corral or other fabricated chute would.

The Scimitar-horned oryx had chutes that were made of deadfall as well, but also incorporated railroad ties as curbs within the chute. The Arabian oryx chutes had curbs as well, but they were primarily made up of large sections of tree trunk. These were used

to ensure that animals would have all four hooves perfectly positioned within the chute. Any animal that had three hooves in the chute and one up on one of the curbs would not maintain this position for long due to the discomfort of standing so unevenly.

The addax, were again the exception. Due to the large size and potential danger of being in an enclosure with addax, combined with their aversion to being in close proximity to the keepers, we decided to create a chute that would be a solid visual barrier. It was hoped that by using this design we could collect the animals' weights from outside the exhibit without intimidating them by being in such close proximity. This was possible because the animals were to be weighed in an off-exhibit area. The chute was constructed of panel barriers made of 1.27cm (1/2") sheets of plywood attached to a 5.08cm x 10.16cm (2" x 4") frame. The panel barriers were held erect by being connected at one end to a hayrack hung from a chain link fence, and by being connected at the other end to 10.16cm x 10.16cm (4" x 4") posts set in the ground. Each panel stood 1.22m (4') high and was 1.22m (4') in length (Figure 3). This design proved successful, however if attempting this design again, dimensions for each panel would probably be changed to an overall length of 1.83m (6'). This change would be necessary because in the chute there is space taken up by the hayrack that is not available on ground level. Therefore, it becomes necessary to back the scale up from the hayrack. In doing this, a small portion of the scale then lies outside the chute. By not having the entire scale within the chute it becomes possible for the addax to gain access to the hay without being completely aligned in the correct position for weight to be obtained. An increase in the length of the chute would compensate for this flaw and would accommodate the animal's entire body length. This would in turn lead to a greater rate of consistency when attempting weight collections since it would be more probable that animals would have all four hooves in the correct position.

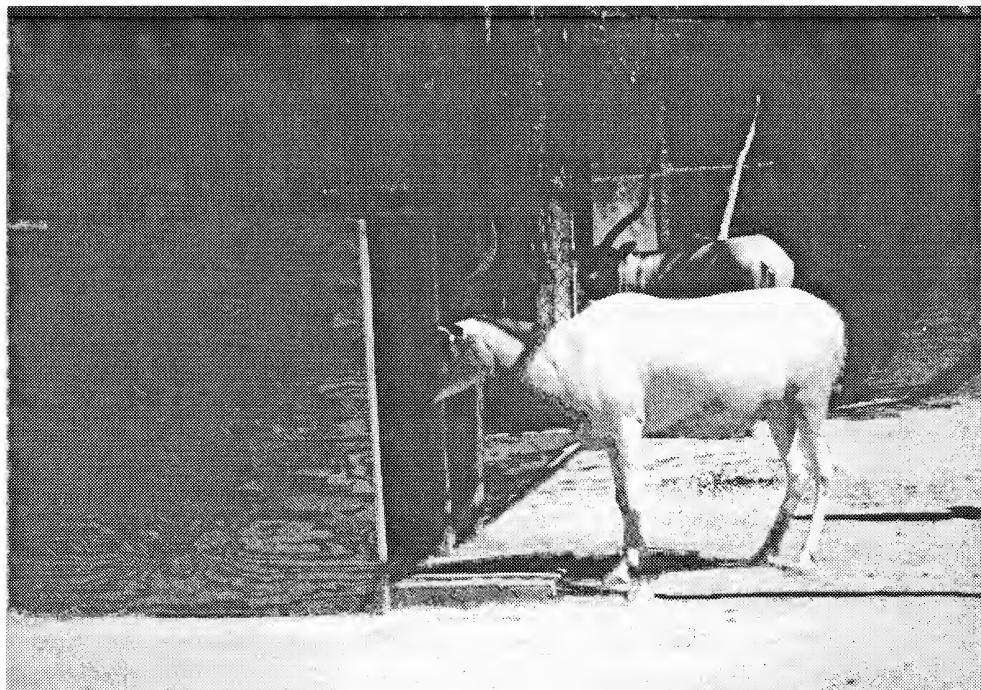


Figure 3. An Addax pauses before entering the chute. (Photo by Joseph Robteria)

Once the animals were successfully acclimated to entering the chutes and remaining in them while they consumed their daily diets, we introduced "mock scales". These mock scale platforms match the appearance and dimensions of the true scale in almost every way. We constructed them by using 1.91cm (3/4") sheets of plywood set on a base frame of three evenly spaced 5.08cm x 10.16cm (2" x 4") boards that run lengthwise on the underside of the platform (Figure 4). The mock platforms are painted to match the color and hue of the true scale. This makes the transition from "mock" to "true" scale easier, as most animals have the tendency to generalize the appearance of the two. Painting (or sealing) the mock platforms also makes them easier to clean and disinfect after each use, and prevents them from warping and wearing-out as quickly. We also mix sand with the paint at a ration of 1 part sand to 4 parts paint. This is to simulate the granularly textured surface of the true scale.



Figure 4. Top and bottom view of the mock scale. (Photo by Joseph Robteria)

The mock scales were placed within existing feed chutes (Figure 5). Space was allotted for a grain bowl, or in the case of the addax, a hayrack to be placed. The period of habituation varied from species to species, as well as from individual to individual. In most cases the feed bowl had to be placed at the entrance of the chute. Then gradually over a period of days to weeks, the bowl was placed further and further back into the chute. This continued until the feed bowl was in the allotted space between the platform and the fence line. At which point, the animal was consuming its diet while standing completely in the chute, with all four hooves on the mock platform. Once the animals were conditioned to this state, the mock scales were interchanged for the true scale and the animals' weights were collected (Figure 6 and 7. Note the indicator hanging on the fence line above the Arabian oryx). Some animals did immediately react to the presence of the true scale, but seemed to overcome their aversion in a relatively brief period of time. Most of the animals adjusted quickly to the scales and willingly used them as regular feed stations.



Figure 5. Mock scale in a feed chute. (Photo by Joseph Robteria)



Figure 6. A Scimitar-horned oryx consuming his daily grain while standing on the scale. (Photo by Joseph Robteria)



Figure 7. An Arabian oryx being weighed. Note the scale indicator hanging on the fenceline. (Photo by Joseph Robteria)

In the case of the addax, despite their initial lack of motivation for food, we continued to offer various types of browse throughout this endeavor. The animals eventually did develop a fondness for this food item and by offering browse during attempts to collect weights, we not only improved our rate of consistency, but also shortened the time duration of each attempt.

Conclusion

In summary, through subtle manipulations of the animals' environments, small changes in the animals' feeding regimes, a little creativity, and a lot of patience, tremendous accomplishments have been made in regards to weight collection. We now have the ability to monitor the weights of these three species as well as several others in our collection. We now plan to collect weights quarterly instead of opportunistically as was formerly done.

Our goal in the 1999-2000 year is to collect daily weights from as many breeding females of these species as possible. We hope to produce some preliminary growth curves on weight gain of pregnant females from conception to parturition. We also anticipate collecting similar data on calf growth and development from all upcoming offspring. With this information we aim to gradually develop baseline data on what are normal weights and normal growth patterns for captive animals, since captive weights often contrast with those of wild species. Our hope is that this material may serve as a reference resource for other zoological institutions recording measures of weight. Through multi-institutional data collection, sufficient sample sizes could be met to produce valid information on captive body weights. The data could then be compared to produce accurate growth curves for captive exotic animals and the husbandry techniques for achieving them.

SPECIES	SEX	AGE IN MONTHS	n	WEIGHT RANGE (kg/lb.)	MEAN WEIGHT (kg/lb.)	WEIGHTS REPORTED IN LITERATURE
Arabian oryx	M	148	1		85.5kg/190 lb.	65-70kg/143-154lb. 1; 65-75kg 2
	F	135-144	2 *	90.45-112.95kg/201-251 lb.	101.75kg/226.12 lb.	
	F	126-131	1 *	88.42-88.87kg/196.5-197.5 lb.	88.65kg/197 lb.	
	F	114-119	1 *	93.82-54.5kg/208.5-210 lb.	94.16kg/209.25 lb.	
Addax	M	81-83	1 *	123.75-126.67kg/275-281.5 lb.	125.21kg/278.25 lb.	Males 100-125kg/220-275lb. 1; 81-122kg 2
	F	122-124	2 *	95.4-97.42kg/212-216.5 lb.	96.16kg/213.7 lb.	Females 60-90 kg/132-198 lb. 1
	F	86	1		107.91kg/239.8 lb.	
	F	19	1		86.85kg/193 lb.	
Scimitar-horned oryx	M	142	1		126.9kg/282 lb.	180-200kg/396-440 lb. 1; 204kg 2
	F	97	1		133.87kg/297.5 lb.	

- * Denotes where multiple weights were available for an animal.
- 1 Keienburg (1990).
- 2 Macdonald (1984).

TABLE 1. Collected weights of aridland antelopes at the Dallas Zoo.

Acknowledgements

This endeavor was accomplished with the cooperation of a number of individuals. Specifically, thanks goes out to Lisa Fitzgerald for her collaborative ideas on chute design and also for editing multiple drafts of this paper; Anita Schanberger and Ken Kaemmerer for their support and encouragement, and for editing of this paper; Alex Vasquez for collecting the weights on the Scimitar-horned oryx; Jeanette Boylan for assisting with computer graphics; and all the keepers and relief keepers who helped build mock scales and who were consistent with the conditioning programs of these and other animals.

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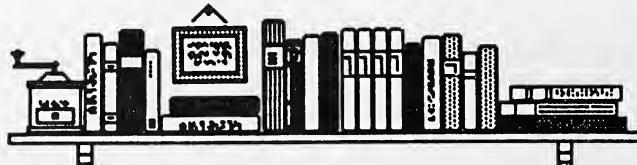
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Products Mentioned in the Text

Weigh-Tronix scale:

manufactured by Weigh-Tronix, Inc.
1000 Armstrong Dr.
Fairmont, MN.
56031-1000 USA.



Book

Review

Chameleons: Nature's Hidden Jewels

By Petr Necas 1999

Krieger Publishing Company

PO Box 9542, Melbourne, FL 32902-9542 U.S.A.

Hardback, 348 pgs.

Price: \$49.50

*Review by Susan Dyer, Former Zookeeper
Kentucky Reptile Zoo, Slade, KY*

Petr Necas has created a massively comprehensive resource for herpetoculturists everywhere. *Chameleons: Nature's Hidden Jewels* details the taxonomy, habitat, physical attributes, diet, and captive care in such a way that anyone thinking of keeping one of these complex animals will have the tools with which to do so.

The book opens with a general section that discusses taxonomy, biology and general care in captivity and progresses to a special section that gives specific detail on fifty different species. Appendices at the end list fossil species, habitats, taxonomy and a comprehensive bibliography.

This book shows the reader how incredibly complex keeping chameleons in captivity can really be. The difficulty to identify each animal and then the attempts to match its native environment in captivity will deter many potential keepers. This combined with the little known fact that the animals do not generally live very long, 2-5 years for smaller species, makes a lot of effort for a limited amount of enjoyment with an animal.

Chameleons have very complex visual displays that demonstrate mood and intent when in any sort of encounter. Mr. Necas discusses these colorations in species-specific detail, which can aid in identification and diagnosis of sickness or stress. The book is saturated with photos that are very indicative of the animals in their natural environments.

The book opens with an overwhelming discussion of systematics that would be better placed after each species has been individually discussed so that the reader can become familiar with the scientific names prior to being immersed in a discussion of them. It discusses the history of taxonomy in such overwhelming detail that the intent of clarification is lost in the confusion of old and new names. Beginning the book in this manner will cause many people to immediately want to put it down and never look at it again. If the reader does manage to get over this hurdle, the book contains a cornucopia of information for any chameleon lover. This discussion combined with a lack of a subject index are the only issues that could be improved for this book.

Veterinarians, hobbyists and breeders alike would benefit from this extensively researched and footnoted wealth of information. The book is a reasonably priced hardcover (around \$50) and is a must own for any serious chameleon lover.

Enclosure Enrichment for a Visually Impaired Ruppell's Griffon Vulture (*Gyps rueppellii*)

By Joanne Luyster, Keeper II
Louisville Zoological Garden
Louisville, KY

Background

A Ruppell's griffon vulture (*Gyps rueppellii*) chick captive hatched on 17 February 1995. Members of the Zoo's bird department hand-reared the chick, using a vulture hand puppet when feeding and servicing the bird. When the vulture, called Harvey, was eight months old, staff veterinarian Roy Burns conducted an eye examination because bird department personnel indicated that Harvey behaved as though his vision was compromised. Dr. Burns determined the vulture had bilateral cataracts.

Veterinary ophthalmologist Dr. Margie Gilmour performed successful surgery on Harvey, removing the cataracts from both of his eyes. However, although the vulture regained some vision post surgically, he still exhibited impaired vision. Dr. Burns and Dr. Gilmour were unable to conclusively identify the remaining visual problem. Since Harvey demonstrated that he could negotiate satisfactorily within a new enclosure when given the opportunity, the veterinarians decided against further treatment.

Housing Arrangements

The bird department staff attempted an unsuccessful introduction between Harvey and Phoenix, another Ruppell's griffon vulture in the Zoo's collection. Bird Curator Gary Michael thought that if Harvey and Phoenix formed a maintenance bond, Phoenix could be of assistance to Harvey in the larger flock on display. Unfortunately, Phoenix, a parent-reared bird, displayed aggression toward Harvey. The Zoo's Ruppell's griffon vulture flock is part of a multi-species exhibit including giraffes. Due to his visual impairment, Harvey could not be integrated alone into the flock for fear he would be injured, intentionally or unintentionally, by the hoofstock. Consequently, Harvey was housed separately. Harvey's enclosure consisted of an inside stall and an outside yard, adjacent to the yard housing the vulture flock.

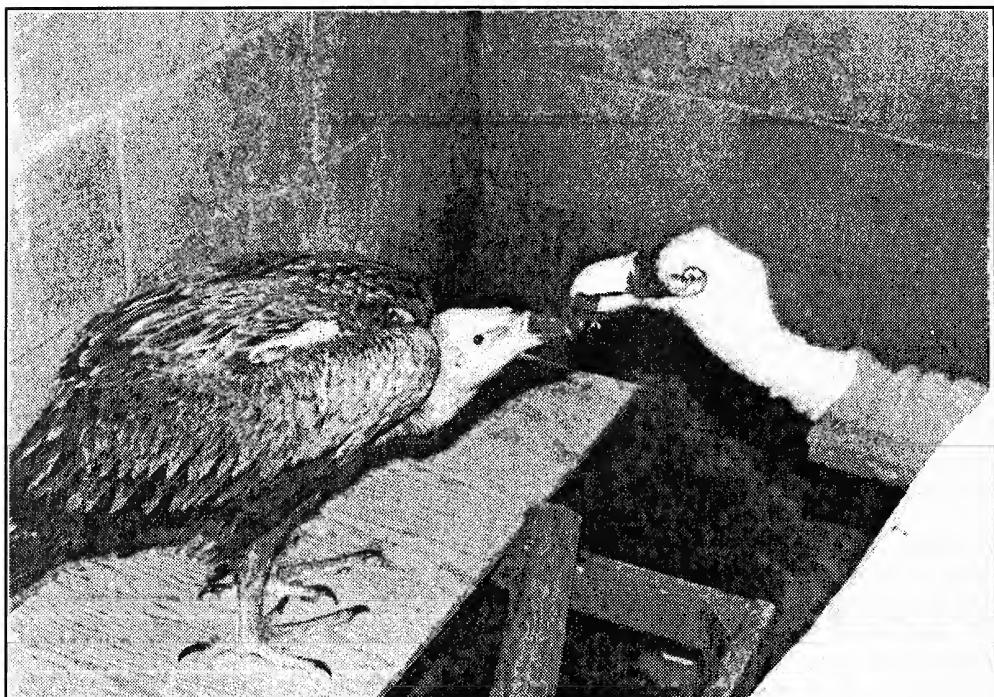
Harvey spent the majority of his time perched inside his stall. The arrival of the bird keeper to service the enclosure became Harvey's primary "enrichment." As a result, Harvey spent these "enrichment sessions" attacking the hose and aggravating the keeper trying to clean the enclosure. When I inherited Harvey as part of my routine, I received permission to enhance Harvey's enclosure with various props.

Implementation of an Enrichment Program

Implementing an enrichment program for Harvey involved more than just adding objects to his environment. Because of his visual impairment, he was extremely wary and/or frightened of anything new or different.

I began Harvey's enrichment program by attaching paper towel roll cores around his stall. It took several days before Harvey approached these new objects, but once he realized he could "catch" them and shred them, he readily attacked the rolls. I progressed to attaching the rolls in his outside yard, including wrapping them around plants growing in the yard. Harvey accepted this change and I was ready to incorporate more items. I brainstormed with other members of the bird department, and we came up with a list of other enrichment possibilities.

Because Harvey enjoyed attacking his black rubber water tub, we thought other plastic buckets might attract his attention. However, when presented with a yellow Tidy Cat™ bucket, Harvey clumsily scampered to the far end of his enclosure and cowered in the corner. Indeed, other brightly colored objects, especially red and yellow, produced the same reaction from Harvey. Therefore, I decided to try more subdued colored small cardboard boxes, free of tape and staples.



Ruppell's griffon vulture, Harvey, being fed with vulture hand puppet during hand-rearing. (Photo by Joyce Turner)

I opted for the outside packing boxes for crickets shipped to the Zoo. I placed the box in his outside yard. After two days, I arrived to find the box squashed flat and partially "disemboweled." I replaced that box and slowly increased the number of boxes in his yard. I then added the "egg crate" partitions from inside the cricket shipping boxes, sticking them in various locations around his enclosure. After a day, Harvey started ripping up the partitions as well. Gradually Harvey progressed to larger brown boxes and eventually multicolored boxes. The brightly colored sturdy cardboard boxes used to ship grapes became one of Harvey's favorite "victims." Later, I added clean, unhusked ears of corn, placing them in holes in the boxes. Harvey plucked and shredded these, as well.

In conjunction with the boxes and partitions, I placed Harvey's large molted feathers around his yard, including sticking them in the boxes, on his perches, and weaving them in the fence slats. Without fail every day Harvey plucked each feather from its spot in the yard. Eventually I included available peacock feathers in the feather "decorating."

If Harvey was inside his stall when I arrived in the morning, I locked him in and repropelled his outside yard. When given access to the yard, Harvey ran out, wings spread and hissing, and attacked an enrichment "victim." This kept Harvey occupied while I cleaned his stall. On hot summer days, Harvey returned to the stall to bite the bubbles in his water tub as it filled, and then he jumped up and perched on the edge of the tub to

receive his shower. Conversely, if Harvey was outside when I arrived, I reversed the servicing process.

Results

With the variety of enrichments, Harvey acted more animated and engaged in his environment. Indeed, he seemed to look forward to discovering any changes or new "victims" that may have materialized in his yard during his absence. Interestingly, as Harvey increased his interactions with his surroundings, he appeared to be able to see better, though not perfectly. Dr. Burns speculated that because of the various stimuli, Harvey may be "learning" to "use" his vision more acutely.

Conclusion

Harvey continued to thrive in his enriched environment. Shortly before he left the Louisville Zoological Garden for Safari West, Santa Rosa, CA, he became the "tutor" for a 1999 hatchling Ruppell's griffon vulture chick named Cricket. Harvey and Cricket were housed in adjoining enclosures, separated by a screen door. Cricket spent most of the day keenly observing Harvey's actions. Because she has no visual impairment, Cricket quickly began mimicking Harvey's behaviors. Most notably, her fear of a hose and water was assuaged after seeing Harvey get a shower. Indeed, Cricket became one of the "cleanest" Ruppell's griffon vultures, as she demanded and received a daily shower. All enrichment items used with Harvey also enhanced Cricket's enclosure until she was old enough to be integrated into the Zoo's Ruppell's griffon vulture collection.

Animal Trainers Network Workshop

June 11,12 & 13, 2000

Cincinnati Zoo and Botanical Garden, Cincinnati, OH

The Cincinnati Zoo and Botanical Garden will host the Animal Trainers' Network Workshop June 11-13 in Cincinnati. Full registration for the conference is \$25.00 which includes seven meals. After 21 May, registration fee is \$30.00. Day rates are \$10.00 for 11 June, \$15.00 for 12 June, and 13 June is free. A \$2.50 per day late fee will be assessed after 21 May. The program will include speaker meetings, a tour of the zoo, small open floor discussion groups divided by taxon groups (elephants, rhinos/hoofstock; primates; birds/reptiles; cats/carnivores; and marine mammals), workshops in basic training and a bar-b-que and silent auction at the zoo. Workshop presenters will include Gary Priest, John Kirtland, Jane Anne Franklin, Heidi Hellmuth, Tim Sullivan, Thad Lacinak, Michelle Farmerie, and Gary Wilson. Those attending are encouraged to bring slides or videos of operant conditioning. Also an item from your zoo for the silent auction.

There will be FREE housing in the Manatee Springs Building where there is carpeted floor space for 75 people (sleeping bag required). Showers are available. There is also limited housing with area keepers on a first-come, first-served basis. Vanishing Giants, the zoo's new elephant facility, will be open in time for the workshop. The building houses eight Asian elephants, three Masai giraffe and five Okapi. For further information contact: Linda Kelly, Vicki Ulrich, Butch or Valerie Haft at (513) 281-4700 ext. 8356; Dawn Strasser (513) 281-4700 ext. 7710; Jenny Kroll (513) 281-4700 ext. 7712 (e-mail:jenny.kroll@cincyzoo.org or hospital@cincyzoo.org).

Multi-Male Bisexual *Entellus* Langur Troop: It Can Be Done!!

By

*Dawn Neptune and Elizabeth Larsen, Primate Keepers
Utah's Hogle Zoo, Salt Lake City, UT*

Introduction

Utah's Hogle Zoo (UHZ) has exhibited an intact troop of *Entellus* langurs (*Presbytis entellus thersites*) since 1990. Following a recommendation from the langur studbook keeper in the fall of 1997, we began to assess the possible introduction of an additional, solitary male to the all-adult troop, consisting of one male and three females. Attempts to introduce this new male with other males at previous institutions had been unsuccessful.

Studies have shown that there are broad variations in social behavior among langur troops, specifically in male relationships. The most peaceful and most prevalent form of social structure is comprised of a stable core of related females and just one breeding male. Social changes within and between troops frequently occur, resulting in considerable social fluidity, in which troops will change from uni-male to multi-male and back to uni-male status (Mohot, 1977).

Males maturing in a bisexual troop are subjected to increasing harassment from the adult resident male until they are driven out. Subsequently, many of the expelled males will form a nomadic all-male band, in which they will exist peacefully. From time to time, an all-male band will attack a uni-male breeding troop, attempting to expel its resident male, as well as any male offspring (Hausfater and Vogel, 1982). If successful, a new male will assume leadership, and drive off the rest of the all-male group (Richard, 1985). In order to establish leadership, the new resident male will exhibit aggression towards the females as well (Hausfater and Vogel, 1982). The troop is then restored to uni-male status.

Due to the natural behaviors of these animals, attempts to introduce a second male to a bisexual troop at zoological institutions have not been successful. Therefore, little information is available on multi-male bisexual troops in captivity.

Our introduction began with a series of gradual steps progressing with limited optimism towards a new langur troop. A twelve month process resulted the successful introduction of the new male.

This paper will discuss the challenges and details of the introduction, analyze the major factors affecting its success, and present additional considerations for future langur introductions. We will address potential benefits and implications for other difficult animal introductions.

The behavior exhibited within our troop of langurs was typical of a natural population. Wild caught in 1979, the troop had been housed in at least two other institutions before their arrival to UHZ in 1990. Until the introduction the langurs had been housed in our primate building, an aging facility which had been renovated into semi-naturalistic indoor exhibits. In 1997 we had 1.3 adult langurs, which included a nine-year-old female offspring. The ages of the adults are unknown, due to their wild-caught status. Our

resident male, "Sam", had a history of very aggressive tendencies towards the staff, visitors, and occasionally the females as well. Aggression displayed was typical in the form of running and bouncing off exhibit glass, teeth grinding, and leg slapping. Breeding behavior had been observed but was not following a consistent cycle. In previous institutions, "Sam" had sired offspring, the males of which were removed from the troop at the appropriate age. Until this point, the troop had never been introduced to an unrelated langur. Attempts to introduce our migrant male, "Kane", to other males at previous institutions had been unsuccessful. In fact, UHZ is one of only three remaining institutions housing *Entellus* langurs in the United States. It was our goal to provide "Kane" with an opportunity at a socialized life with conspecifics.

Considering the natural behavior of langurs, and the aggressiveness of our male, we began the introduction with limited optimism.

Materials And Methods

Upon "Kane's" arrival and completion of quarantine, he was placed in a holding facility (dimensions see chart A) in the primate building, within close proximity of the main langur exhibit. The two enclosures are joined by an overhead mesh catwalk. A Lexan® window provided visual access between the holding facility and the catwalk. For three months the langurs were given visual access only. Periodically, "Kane" was given access to the catwalk after a session for olfactory exchange.

CHART A

Old Primate Facility	Dimensions
Outdoor enclosure	8.7 x 6.6 x 7.2 meters (638 sq. feet)
Indoor holding, 'Kane'	4.2 x 3.2 x 3 meters (147 sq. feet)
Indoor additional holding	2.7 x 2.7 x 3 meters (81 sq. feet)
Catwalk	.6 x 1.5 meters (2' x 5')
Indoor, main display	6 x 6.6 x 6 meters (440 sq. feet)

After the installation of a howdy apparatus in the catwalk, the troop was given tactile contact. The females were separated from "Sam" for the first session, subsequent occurrences included "Sam". Tactile contact through the howdy apparatus was continued for eight months.

The Old World Monkey Taxon Advisory Group had determined that the *Entellus* species was not a genetically viable population within the United States. Due to this breeding moratorium, "Sam" needed to be neutered before the introduction was to proceed. "Kane" had already been vasectomized at a former zoo. Because we were continuing to see high levels of aggression during the tactile sessions, the decision was made to castrate "Sam" for behavior modification.

At the time, a new exhibit with a naturalistic outdoor yard was not occupied. The exhibit provided more space (dimensions see chart B), contained more stimuli and was foreign to all of the langurs. The outdoor display is enclosed in Carlos™ mesh, and has many different species of flora including grasses, bushes, trees as well as deadfall. This exhibit was our best option for the introduction.

The introduction began with the two males. On the day prior and on the day of the introduction both were administered one dose of 30 mg diazepam™ orally (.5-1mg/kg body weight). Diazepam™ is an anxiolytic, Central Nervous System (CNS) depressant drug prescribed to help decrease anxiety associated with the process. Diazepam™ was

chosen because it is a relatively safe drug. Overdoses are generally limited to confusion, decreased reflexes, drowsiness, and other side effects of CNS depression (Hanson, 1992). The males were crated separately and transported to the new facility.

CHART B

<u>New Primate Facility</u>	<u>Dimensions</u>
Initial indoor exhibit	4.8 x 7.5 x 5.1 meters (400 sq. feet)
Initial outdoor exhibit	14.7 x 15.3 x 6 meters (2499 sq. feet)
Initial holding	3.3 x 3.3 x 2.4 meters (121 sq. feet)
Current indoor exhibit	7.2 x 4.8 x 5.1 meters (384 sq. feet)
Current outdoor exhibit	15 x 12 x 6 meters (200 sq. feet)
Current holding	4.5 x 4.5 x 2.4 meters (225 sq. feet)

In preparation for the introduction, we had several safety measures in place. Carbon dioxide extinguishers were present, water hoses, alarm horns, nets, rakes, and most important, our veterinarian with emergency equipment. Due to the increased aggression levels we had been seeing when staff were present during the howdy phase, the keeper staff were strategically placed at observation points around the exhibit but attempted to remain out of sight of the langurs.

One male was released into the indoor exhibit and the other into the outdoor enclosure. After approximately 30 minutes we gave them access to each other, in the larger outdoor exhibit. For the next three weeks only these two males were housed together in the new exhibit.

The next step was to introduce the females. Introducing the females one at a time was considered, but we thought the process would only increase the stress levels and lengthen the duration of the introduction. All females were medicated with Diazepam™ 3 mg daily (.5-1mg/ 1 kg body weight) the day before and the day of the introduction. The males were administered a low end dosage of 10 mg the day prior to and the day of the females' introduction as well.

The females were transported the same as the males. The males were moved to the outdoor enclosure in order to release the females into the indoor exhibit. After approximately 30 minutes the females were coaxed outdoors with the males. The same safety precautions were taken with the females' introduction. By the following day we discontinued the Diazepam™, and monitored the langurs closely.

Results

Before relocating the langurs to the new facility the troop was given visual access only. The keeper noted curiosity from "Kane" toward the troop and display behaviors from the resident male, "Sam". "Sam" was noticeably more aggressive towards the females during and following these sessions.

Following the installation of the howdy apparatus, three months later, both males were vocalizing and displaying, but were actually more calm when females were present rather than separated. Although the females were present, they would attempt to remain as far away from the males as possible in an adjacent holding area. When only females were given access to "Kane" through the howdy, breeding solicitation behaviors from the females <i.e.-head shaking and hind quarter presentation > were observed.

Because we needed to neuter him and we were still seeing high levels of aggression, the decision was made to castrate "Sam" for behavior modification. Although castration resulted in impotence we did not see a decrease in hostile behavior.

Tactile contact through the howdy was continued for a span of eight months. One year since "Kane's" arrival, and six months following "Sam's" castration, we were still seeing high levels of aggressive behavior, especially from the resident male, "Sam".

Time was against us, winter was rapidly approaching and we were losing our window of opportunity to attempt the introduction in a new outdoor facility. The decision was made to continue with the introduction, despite our apprehension regarding the high levels of aggression still occurring.

When the males were given access to each other, the resident male was the first to see the other male, "Kane", and immediately went over to him. Both males displayed with some teeth barring, leg slapping, and branch shaking, but quickly settled down. The majority of the day was spent in a huddle with intermittent breaks to forage. After the males had been together for the full day we were confident enough with their peaceful behavior to discontinue the Diazepam™.

During the three week period they were housed together, the two of them were frequently seen huddled together and grooming each other. During this time "Sam" developed an abscess on his lower mandible, and was successfully treated without intervention. The cause of the abscess is still unknown but is believed to be unrelated as no aggression was observed during this period.

When the females were brought up to the new enclosure and given access to the males outdoors, they immediately initiated contact with the new male. Some hesitancy was noted from the female offspring. The females began to solicit "Kane" with head shaking and hind quarter presentation. When mounting was observed, "Sam" would attempt to intervene but was quickly chased away. The course of the day continued with this behavior, interlaced with bouts of foraging. For the majority of the day "Sam" was observed at the periphery of the troop.

Discussion

The introduction of the new male, "Kane", to the existing troop went far better than we had anticipated.

There are several factors we contribute to this surprising success. First, the use of a sedative significantly decreased the males' anxiety and aggressive behaviors typically associated with transport or any major change. The aggressive behaviors frequently seen with anxiety had subsided as well. Alarm and threat vocalizations and aggressive displays were kept at a minimum.

Second, the castration of the resident male, "Sam". Although he was exhibiting aggressive behavior up until the introduction (six months after the surgery) perhaps the addition of the new male aided in suppressing his dominant behavior. Immediately following the introduction of the two males, "Sam's" aggressive behaviors towards conspecifics, keepers and visitors subsided.

Third, the ability to perform the introduction in an exhibit which was foreign to all participants. The troop had been housed in the former non-naturalistic exhibit for eight years, with "Sam" as the dominant male and the absence of new conspecifics. The exhibit was definitely regarded as "Sam's" territory. The size of new indoor exhibit and the use of the naturalistic, outdoor exhibit provided enrichment as well as displacement opportunities.

Last, the weather conditions need to be taken into account. Although we did not plan

the males' introduction for a cool day, the weather may have aided in drawing the males together. After the initial confrontation, the two males remained in a huddle for the majority of the day.

In spite of the success of the introduction, with hindsight we see a few points which were overlooked in the process. Primarily, the langurs were unfamiliar with their new surroundings. Not only were they in a new exhibit, but they had never been in a naturalistic outdoor yard, and had not been behind Carlos™ mesh. The ability of the mesh to "fade" into the background also made it difficult for the animals to see the transfer chute to lead them into the building. Subsequently, wrapping an opaque tarp around the chute provided the animals with the visual cues they needed to find the entrance to the building. The unfamiliarity with the new indoor exhibit as well and the use of the anxiolytic made typical maneuvering difficult for the animals. There were several occurrences where lightheadedness and altered awareness of depth perception made them reach for vines that were not within close proximity. Although our troop had been housed behind glass, during this process "Sam" attempted to jump to the window's ledge or through the glass, and fell to the floor of the exhibit. Once a visual cue was in place, this did not occur.

Time constraints were another obstacle. We were cautious of introducing the monkeys during public hours. If we had cordoned off the area, manned by volunteers or staff, we would have been able to let the animals proceed on their own.

Not only was the facility new to the langurs but the animals (*Ateles* sp., *Colobus guereza*) housed in it were unfamiliar as well. The threat of a new species they had not encountered before was an unnecessary distraction to the introduction process.

The first few months following the introduction were peaceful, with the females increasing their frequency of solicitation behavior towards the new male. Initially we were concerned about "Sam" becoming ostracized from the troop. After the first few days we began to notice him huddled with all of the troop members at one time or another.

Since the first few months we have observed many typical behaviors you would expect to see in a multi-male bisexual troop. All of the females began to cycle independently, and on a predictable basis. Accompanying estrus, the new dominant male, "Kane", shows favoritism to the one cycling female and can be quite aggressive towards the other troop members. Occasionally the youngest female will try to terminate the copulation with another female which results in "Kane" being hostile towards her. During one of these incidences she sustained a tear to her tricep, which resulted in immobilization. Reintroduction to the troop was without complication. On rare occasions when "Kane" is very rough with the females "Sam" will intervene, but no serious aggression has been observed.

Changes occur in troop dynamics when the females are in estrus. When one of the females is in estrus, the female to female interaction is limited by "Kane's" possessive behavior. When none of the females are cycling, "Sam" and "Kane" will be observed together more frequently.

The aggressive behaviors due to breeding have created a few challenges. Hair loss, although insignificant, has resulted from these bouts, due to "Kane" warding off the conspecifics. This has created a public display dilemma.

Second, the possessiveness of "Kane" has placed a few constraints on husbandry. Without means to isolate "Kane", it can be very difficult to shift all animals into the same holding

facility. "Kane" will attempt to prevent others from sitting in the vicinity of the female in estrus.

To alleviate some of the breeding related aggression, we have considered many options. We began with the least invasive, a homeopathic alternative. We sprinkled Chamomile tea (*Chamaemelum nobile*), as a relaxant on their diet daily. Following a period of one month, we did not witness any change in their behavior. Considering the sacculated stomachs of colobines, which increases the length of digestion, we were hesitant to administer a more potent herb that might remain in their system for long periods of time.

The next step was to administer a form of contraception to the females, in an attempt to prevent them from cycling. Depo-provera™ was chosen for several reasons. The drug's three-month duration would allow us to assess progress, and we would have the option to discontinue without intervention. Again, due to their digestive system, and little known research, oral contraceptives were disregarded.

Immobilization of the females was a time-consuming, and highly stressful process for all involved. Each female was administered approximately 30 mg of Depo-provera™ (5 mg/ 1 kg body weight).

Reintroduction on all three occasions was relatively placid. Following contraceptive administration on the first female, there was a slight increase in troop stability. Subsequent to the contraceptive placed in the other two females, we began to see a change in "Kane's" behavior, which we have labeled as "frustration". The females continued to present to "Kane" in a submissive fashion, but no longer solicited his attention. "Kane" was frequently seen grabbing the females by their tales, smelling their posterior, then proceeding to the next female. We began to see increased aggression from "Kane" toward the females following these occasions. Antagonistic behavior to the other male, "Sam", began to increase in occurrence and intensity as well. The frequency of females choosing to huddle with "Kane" also had diminished. The option to re-administer Depo-provera™ when complete has been negated.

Concern mounted regarding this alteration in "Kane's" behavior so the decision was made to switch the langurs' enclosure within the same facility. The new exhibit (see chart B) provides them with a more complex environment complete with visual barriers and resting platforms, as well as access to the outdoors on a daily basis. The new exhibit did seem to alleviate some of "Kane's" frustrated aggressiveness. To date we continue to see much of the same behaviors. When the females begin to cycle again, we may consider castration of "Kane" if the aggression levels mount to a perilous level.

Summary

Overall, the integration of an additional male to our bisexual troop has been very successful. For future introductions we would suggest preliminary considerations on how to approach breeding-related behavior before proceeding with the introduction. The ideal scenario would incorporate a large multi-faceted exhibit with an outdoor naturalistic display and would include several holding quarters with opportunities to separate individuals. This would allow the institution to let the natural behavior continue, within safe parameters. In addition, suppression of the females' cycles prior to the introduction may prevent the "frustration" behavior we are seeing from the dominant male.

As space defines conservation strategies in captivity, we will see many changes in the approach to animal introductions and troop dynamics, as well as designing facilities for

captive primate populations. A multi-male bisexual *Entellus* langur troop, once thought improbable, has now been realized. In turn, this will have significant consequences on zoos' roles in captive primate conservation and management.

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Carlos Mesh™
Carlos Design
Las Vegas, NV. 89119

Depo-provera™
Upjohn Co.
Kallamazoo, MI 49001

Lexan™
General Electric Structural Product Department
Mt. Vernon, IN 47620

Chapter News Notes

New AAZK Chapters Announced

We would like to welcome the following new Chapters into the Association. We wish them well with all their programs and projects.

The Seneca Park AAZK Chapter

This Chapter is located at the Seneca Park Zoo, 2222 St. Paul St., Rochester, NY 14621.

Officers for the Seneca Park Chapter are:

President.....Kara G. Masaschi
Vice President.....Susan DeFalco
Secretary.....Tracy A. Zlotkus
Treasurer.....Tina C. Fess
Chapter Liaison.....Amy Cutting

Riverside Zoo AAZK Chapter

This Chapter is located at the Riverside Zoo, 1600 S. Beltline Hwy W., Scottsbluff, NE 69361.

Chapter officers are:

President/Chapter LiaisonJudy McAuliffe
Vice President/SecretarySarah Pinet
Treasurer.....Heather MacLauchlan

Oakland Zoo AAZK Chapter

This Chapter is located at the Oakland Zoo, 9777 Golf Links Road, Oakland, CA 94605.

Chapter officers are:

President.....Kristi A. Martin
Vice President.....Liana Pasqual
Secretary.....Greg Gilbert
Treasurer.....Brenda Oswald

West Michigan Association of Zoo Keepers

This Chapter is located at the John Ball

Zoo, 1300 West Fulton, Grand Rapids, MI 49504.

Officers for the Chapter are:

President.....Daniel Malone
Vice President.....Merrie Murphy
Secretary.....Julie Katt
Treasurer.....Beth Klochack
Chapter Liaison.....Tim Sampson

Virginia Chapter of AAZK

The Virginia Chapter of the American Association of Zoo Keepers, Inc. has adopted a new logo. The new logo was designed by Chapter Secretary Grant Rhodes Gregory and is shown below.



Burnet Park Zoo AAZK Chapter

On 1 January 2000, the Burnet Park Zoo's name was changed to the Rosamond Gifford Zoo at Burnet Park. We are still working on the proper name for our Chapter

The AAZK Chapter, located in Syracuse, NY, is involved in funding many good conservation/wildlife projects: Hornacker Wildlife Institute, Rio de Janeiro Primate Center and the Jamaican Iguana Project, to mention a few. We remain active featuring video presentations in our speaker program, low maintenance fundraising and monthly meetings.

--Bernie Feldman, Chapter Liaison

AAZK Metro Boston Chapter

Elections were held at our first meeting of the new year and our new officers for 2000 are:

President.....Kim Zirpolo
Vice President.....Christine Morabito
Treasurer.....Aurora Flores
Secretary.....Ivan Ives
Chapter Liaison.....Bob Hayes

Our first big event of the year was Bowling for Rhinos held on 31 March. Over 80 people showed up this year which is a pretty good crowd considering we normally only have a turnout of 25-30 people. Our thanks to everyone who worked so hard to make this year's event a huge success. We are still waiting on some sponsor sheets, but when all is said and done we should have raised approximately \$3000 for the BFR project sites.

Our Chapter's Second Annual Moth Ball will be held on 23 June. The Moth Ball is a creative dress party held in and around the zoo's butterfly exhibit to welcome summer. It features a silent auction and plenty of loud music and fun people. Although we have not decided what we will do with this year's proceeds, we are considering several ideas including the AAZK Endowment Fund. Any individual or Chapter wishing to donate items (Chapter t-shirts, posters, gift shop items, etc.) should send them to Zoo New England, 1 Franklin Park Road, Boston, MA 02121, Attn: Kim Zirpolo or call (617) 989-2081.

Finally, I would like to thank Zoo New England for becoming an Institutional member of AAZK. AAZK needs this support and if your zoo is not a member, please ask your director to consider supporting AAZK at the Institutional level. Thanks and have a great summer!!

--Bob Hayes, *Chapter Liaison*

Wildlife Safari AAZK Chapter

Hello and greetings from a sunny, but still soggy Winston, OR. At the turn of the New Year it was election time again. I would like to congratulate those officers returning to their posts and new members who have taken active roles as officers in our Chapter. Returning officers are Anisa Bear (President), Jason Kauntze-Cockburn (Vice President), Jeretta Stanton (Secretary), and Pat Roberts (Treasurer). In addition new positions are Amy Exceen as Historian and Erin Kelly as Chapter Liaison.

Now with springtime in full force, Chapter activities are quickly picking up. Bowling for Rhinos is scheduled for mid-June and the search for sponsors is underway. A lecture entitled "Elephants as Ambassadors" by Dinah Wilson, an elephant keeper at the Safari, was sponsored by AAZK before Dinah jetted off to London to speak on the same topic at Cambridge University. Providing snacks and refreshments drew a large crowd at this first time event for our Chapter. It was such an educational opportunity for our staff members, we hope these lectures will be a regular occurrence.

On the brink of Earth Day our Recycling Survival Game will travel to the fairgrounds to educate children on the importance of the three R's: reducing, recycling and reusing. Finally, our cheetah bank raised \$120.00 in a five-day period over spring break. The funds raised go to support the Cheetah Conservation Fund. (CCF).

Good luck to all Chapters participating in Bowling for Rhinos. May you raise lots of money and bowl a lot of strikes!

--Erin Kelly, *Chapter Liaison*

*Institutions wishing to advertise employment opportunities are asked to send pertinent data by the **10th of each month** to: Opportunity Knocks/AKF, 3601 S.W. 29th St., Suite 133, Topeka, KS 66614. Please include closing date for positions available and when setting these dates keep in mind that because of bulk-mail, most readers do not receive the AKF until the middle of the month or later. There is no charge for this service and fax listings of positions which become available close to deadline are accepted. Our fax is (785) 273-1980. Please Note NEW ADDRESS for AAZK!*

The Philadelphia Zoo currently has positions available for mammal keepers. One (1) year keeper experience required; degree valued. Interest in conservation education and ability to interact in a positive, friendly manner with the public. \$14.13/hr plus benefits package. Send resume to Human Resources, THE PHILADELPHIA ZOO, 3400 W. Girard Ave., Phila.,PA 19104. PH: (215) 243-5350. Visit our Web site at <http://www.phillyzoo.org>

Small Mammal House Keeper... This is one of two line positions in the building. Collection for this line is a combination of nocturnal and diurnal species, including vampire bats, lorises, mouse lemurs, African dormice, Malagasy giant jumping rats, mouse deer, tree shrews, pygmy marmosets, and elephant shrews. Exhibits and work are exclusively indoors. Interest in small mammal husbandry and creative exhibitry, some previous experience in same required. Days off would be consistent, but most likely weekdays.

Assigned Relief Keeper... This position is in the "Rare Animal House", relieving for three line positions on some of the line keepers' regular days off. The collection consists mostly of primates, including lemurs (2 species), marmosets and tamarins (4 species), spider monkeys, mangabees, and langurs. Other species include naked mole rats, Rodrigues and Egyptian fruit bats, dwarf mongoose, armadillos, acouchi, and tree kangaroos. Most exhibits/work indoors. Interest and some experience in primate husbandry required; experience, ability in exhibit furnishing a plus. Days off would be consistent, but most likely weekdays.

ANIMAL KEEPERS (MAMMAL & BIRD DEPTS.)...Full-time positions available in the Mammal and Bird Departments at The Baltimore Zoo. Each candidate must have graduated from an accredited high school and have one (1) year of paid experience in the care and handling of a variety of mammals and/or birds, excluding pets; or have graduated from an accredited high school and have six (6) months experience in the care and handling of animals in a zoological institution; or have a bachelor's degree from an accredited college or university in biology, zoology, animal science, or veterinary technology. Maryland Driver's License and a good driving record required. Entry level position under the direct supervision of a Senior Keeper and/or Curator. Send resumé to Personnel Department, Baltimore Zoo, Druid Hill Park, Baltimore, MD 21217 or Fax to (410) 396-6759.

The following three (3) intern positions are available at Acadia Zoo, RFD 1, Box 113, Trenton, ME 04605 (207) 667-3244; e-mail acadiazoo@rcn.com< Positions open mid-May to late August.

HORTICULTURE INTERNS (2 positions)...Duties: will assist horticulture staff in all areas and habitats, including rainforest, arctic, subtropical, Himalayan, southwest desert and temperate North America. Requirements: Must be willing and able to work weekends and holidays; must be able to lift 50 lbs.; must be reliable and flexible with regards to schedule. Horticulture background helpful but not necessary. Stipend of \$100.00 per week. On-site living possible for person with own RV. etc.

ANIMAL CARE INTERN(Carnivores)...Duties include preparation and delivery of diets, exhibit cleaning and maintenance, some light carpentry/construction and landscaping, and enrichment. Primary focus will be in the large and small cat area but intern will be involved to some degree in all areas of the zoo, including educational presentations. Must be able to lift 50lbs.; must have valid driver's license and be able to drive standard transmission. Must be willing to work weekends, holidays and some evening shifts. Stipend of \$100.00 per week. On-site living possible for person with own RV. etc.

INTERNSHIP...Available at the Audubon Zoological Garden located in New Orleans, LA. Summer internship in the Sea Lion Department. This internship is an unpaid position and housing is not provided. Applicants should be juniors or seniors in an undergraduate program, looking to explore the zoo keeping/animal training field. Performing the internship for college credit is strongly encouraged. The internship will last the duration of the summer, beginning in May/June and end in August. The intern will be requested to work 40 hr. weeks, in 8hr shifts, with a willingness to work weekends. Audubon is looking for a committed, hard-working candidate with public speaking skills. The internship will involve conducting daily routines, performing public presentations, maintenance work, and may involve animal handling and swim skills. If interested please submit resumé with cover letter and referenced by **15 May, 2000** to: Suzanne Smith, Sr. Trainer, Sea Lions, Audubon Zoological Gardens, P. O. Box 4327, New Orleans, LA 70178.

HERP INTERNSHIP...The Kentucky Reptile Zoo, a nonprofit organization, is seeking student interns for the 2000 season. The zoo is an educational exhibit, reptile breeding and venom research facility located near Kentucky's Red River Gorge and Natural Bridge State Park. Intern will assist in the captive maintenance of the zoo's reptile collection, collect admissions to the exhibit, give interpretive talks and interact with the public, assist with educational outreach programs, and perform other duties as assigned. In addition, the intern will be responsible for the completion of at least one research project related to the field of herpetology. Intern will not be involved in the handling of any venomous reptiles. Desirable qualifications include a willingness to handle snakes and other reptiles on a daily basis, ability to communicate effectively with people, writing skills, orientation to details, and self-motivation. Students majoring in the biological or natural sciences are preferred. Former interns have arranged for academic credit with their institutions. Benefits include experience with the most extensive and diverse collection of snakes in the area, housing, and \$55/week to cover expenses. Personal transportation is recommended. Starting dates are flexible, but a minimum of three months covering spring (April-June) summer (June-August) and fall (September-November) is required. Deadline application for Fall internships is **30 June 2000**. To apply, send a cover letter and resumé to: Kristen Wiley, Internship Coordinator, Kentucky Reptile Zoo, 200 L & E Railroad, Slade, KY 40376 or e-mail to: kyreptil@pop.mis.net

ZOOKEEPER..Immediate Opening. Private, non-profit otter conservation facility for breeding and study programs, seeking dedicated individual for permanent position. Requires one (1) year experience with exotic animals - experience with mustelids preferred. Responsible for daily husbandry, maintenance of animals and grounds enclosures, diet preparation, and record keeping. Experience with animal restraint and blood drawing preferred. Must be physically strong (able to lift 50 lbs.) and work independently. 40-hour work week including some weekends and holidays. Benefits included. Send letter and resumé to: Otter Conservation Center, Inc., 250 Otter Conservation Rd., Statesboro, GA 30458. Resumés may be faxed to (912) 839-2551.

PRIMATE CARETAKER...The Primate Rescue Center, Inc., a non-profit TAOS-accredited sanctuary is accepting applications for dedicated individual(s) who will commit to a minimum one-year period of employment. Responsibilities include all aspects of daily animal care and maintenance including: cleaning enclosures, preparing food, maintaining enclosures and monitoring the health and well-being of individual animals. Our population includes 11 chimpanzees and 40+ monkeys of varying ages and backgrounds. Interest or experience in operant conditioning is a must, as is common sense, and a sincere desire to enrich the lives of captive primates. We are located in Central Kentucky just south of Lexington. We are not open to the public, but public speaking skills are helpful, as employees may participate in local educational outreach programs (no live animals involved). Salary commensurate with experience plus excellent benefits. Send, fax or e-mail resumé and letter of interest to: April D. Truitt, Primate Rescue Center, Inc., 5087 Danville Road, Nicholasville, KY 40356-9531; Fax (606) 858-0044; phone (606) 858-4866; e-mail:kyprimate@earthlink.net< Visit our website at www.primaterescue.org<

ZOOKEEPER...The Tallahassee Museum of History and Natural Science has an opening on its zoo staff for a zookeeper. The Museum maintains a collection of native Florida wildlife. In addition to the native wildlife, a "Guest Animal" exhibit is opened twice yearly, in which is displayed exotic animals. There is also an 1880's era farm on the Museum grounds in which a collection of domestic animals is maintained. This position requires the knowledge of sound

animal husbandry techniques and excellent "people" skills, to serve the Museum's visitors. Experience in environmental enrichment is a plus. Also preferred is the ability to perform exhibit maintenance and construction. A benefit package is offered, including health insurance, paid holidays and vacation. The work week is Saturday through Wednesday and averages 35-40 hours. This is a position that demands the application of many skills and is an opportunity to broaden one's base of experience. The animal staff consists of four people who share in the care of the entire collection, so there is a wide range of responsibilities to keep things interesting. Please submit resume to: Mike Jones, Animal Curator, Tallahassee Museum of HNS, 3945 Museum Dr., Tallahassee, FL 32310. E-mail: tmhnszoo@nettally.com<

The following four (4) positions are available immediately and until filled. We are doubling the size of the park over the next two years and are looking for professionally oriented people to grow with us. Send resumés with salary requirements to R. Hahn, Chief Animal Person, Catoctin Wildlife Preserve and Zoo, 13019 Catoctin Furnace Road, Thurmont, MD 21788. Information about our facility may be viewed online at www.CWPZoo.com<

For all positions, duties include all aspects of animal care including feeding, cleaning, diet prep, animal and exhibit enrichment, daily record keeping, health monitoring, interaction with the public and assistance with department improvement projects. Salary commensurate with experience. Good medical, dental and prescription benefits. Annual support for continuing education/conferences. Paid vacation after one year. Flexible work schedule and personal days.

AVIAN SPECIALIST...work with primarily psittacine and gallimaceous birds, flamingos, ibis, kookaburra, mudhens, condor and cranes. At least two (2) years in a private or public facility, maintaining and breeding the above taxa. Knowledge of incubating and rearing neonates required. Reports to lead animal care.

UNGULATES?RATITE SPECIALIST...works with antelope, deer, elk, wild sheep, zebra, ostrich, emu, rhea, cassowary and domestic hoofed stock. At least two (2) years in public or private facility, maintaining and rearing the above taxa. Knowledge of basic health concerns and preventive vaccinations and worming procedures helpful. Pole barn and fence building and maintenance a plus. Reports to lead animal care.

VET TECH/SWING ANIMAL CARE...responsible for the overall health of the collection under the direction of the veterinarian of record. Works with birds, mammals and reptiles. Does routine fecal checks and vaccinations under the vet's supervision. Provides nursing care for neonates and infirm. Keeps health records with assistance from registrar. Knowledge of MEDArks program helpful. Certification a plus.

GENERAL CURATOR OF THE ANIMAL COLLECTION...Reports to the Director. Supervises the above positions plus Registrar, Lead Animal Care and all Animal Care Specialists' positions including volunteers and seasonal interns. Coordinates with other department heads to forward the mission of the facility. Must be knowledgeable in the husbandry of all taxa, well-organized and able to work well with all staff and visitors. Must have at least six (6) years experience in a professional zoo with at least three (3) years of supervisory experience in middle management. Must be capable of finishing the standard requirements of this position description. Annual contract and support to a national or international conference.

INTERNSHIPS...the SeaWorld Orlando Education Department has two unique Internship opportunities for college students. The Camp SeaWorld/Adventure Camp Internship provides an opportunity for students to work with SeaWorld's summer camp programs and is offered from May to August. The new Educator Internship which gives students the opportunity to staff various animal attractions and interact with park guests, is offered as a twelve-week Internship during the Spring, Summer and Fall semesters. Contact Jeannie.Thompson@anheuser-busch.com for information on the Camp SeaWorld Internship. Contact Geni.Garza@anheuser-busch.com for information about the Educator Internship. Check out <http://www.seaworld.org> for more information about either internship.

AVICULTURE INTERN...will receive intensive, hands-on training in the care and maintenance of a large bird collection. Will experience all aspects of bird husbandry including general cleaning, handling, incubation, record keeping, public education, etc. Seeking college students or recent graduates with an interest in avian management biology. Interns will work with the aviculturists for a three-month period. This is a volunteer position with on-site housing provided. Internships available year-round. Send a letter and resumé with references to: Tracy Aviary, 589 East 1300 South, Salt Lake City, UT 84105. ATTN: Kristine McCue/Holly Seitz.

INTERNSHIP...The Audubon Institute is offering a hands-on internship at the Species Survival Center. Interns will receive training in the care of endangered species such as antelope, birds and cats. Interns will participate in all aspects of animal maintenance and care; including the incubation and rearing of chicks, exhibit maintenance, animal enrichment program and general cleaning. Special opportunities exist to participate occasionally in laboratory and veterinary procedures. Seeking college students or graduates for a minimum of 10 weeks time. This is a voluntary internship position. Some on-site housing is available. Internships are given year-round. Transportation is necessary. For an application and more information, please contact Jackie Conlon, Audubon Center for Research of Endangered Species, 14001 River Road, New Orleans, LA 70131; phone (504) 398-3166; Fax (504) 398-3100; e-mail: lab@acres.org<

CARNIVORE KEEPER INTERN...six and twelve weeks internships available for applicants 18 years and older. Preference will be given to those pursuing degrees in animal science, zoology, biology, pre-vet and related fields. Interns gain experience in numerous aspects of carnivore husbandry. Species found at the Carnivore Preservation Trust include tigers, jaguars, leopards, snow leopards, clouded leopards, cougars, ocelots, caracals, servals, binturongs, kinkajous and a tayra. Internships are offered continuously. No stipend. Assistance in locating housing available. Please send letter/resumé to: Intern Program, Carnivore Preservation Trust, 1940 Hanks Chapel Road, Pittsboro, NC 27312; or fax (919) 542-4454. For more information, call (919) 542-4684 or e-mail: cptigers@mindspring.com\

VETERINARY TECHNICIAN...The Houston Zoo animal hospital has an opening for a veterinary technician. Technician will work in a progressive animal clinic with three veterinarians and two other technicians to provide services to a collection of about 1800 animals. Duties include laboratory procedures, surgical and anesthetic preparation and assistance, pharmacy, assisting with other diagnostics (such as radiology), maintaining medical records, to list a few. Qualifications are flexible but we are looking for a person who has graduated from an accredited veterinary technician program with the ability to become registered in the state of Texas, and has some zoo or exotic animal laboratory experience. For application and more information go to <http://www.ci.houston.tx.us/department/person/jobs/>; or contact Tammy McRoberts (houzoootech@juno.com) or Dr. Joe Flanagan, DVM (Houzoovet@juno.com). Phone: (713) 284-8343; Fac (713) 284-1334.

AREA SUPERVISOR/Birds...working supervisor position responsible for daily care and maintenance of a diverse collection of birds, and supervision of keeper staff. Strong leadership and communication skills a must. Requires high school diploma and two (2) years experience in care and husbandry of birds in an AZA institution. Degree in animal related field and supervisory experience preferred. Experience in training for public presentation a plus. Competitive salary and benefits. Send letter of interest including salary requirements and resumé to: Yvonne Carbis, Curator of Birds and Reptiles, Caldwell Zoo, P. O. Box 4280, Tyler, TX 75712. The Caldwell Zoo is an Equal Opportunity Employer.

CURATOR...The Forest Park Zoological Society is seeking a Curator to manage the collection at the Zoo in Forest Park. The qualified candidate must have a Bachelor's degree in a biological science field and three to five (3-5) years of paid experience working with animals. Strong supervisory skills are required as well as the ability to work closely with volunteers and staff as a member of a team. Interested applicants please forward your detailed personal resumé including qualifications, work experience, expected salary, and contact phone number to: Andrea Mokrzycki, Vice President Administration and Human Resources, Zoo in Forest Park, P. O. Box 80295, Springfield, MA 01138-0295.

AAZK Membership Application

check here if renewal []

Name _____
Address _____
City _____ State/Province _____ Zip _____

U.S. Members



\$35.00 Professional
Full-time Keepers



\$30.00 Affiliate
Other staff & volunteers



\$30.00 Associate
*Those not connected with
an animal facility*



\$60.00 or up - Individuals
Contributing/U.S.



\$100.00 or up
Institutional/U.S.
*Organizations / Institutions
(requires Board approval)*



International Members
\$50.00 International
*All members outside U.S. &
Canada regardless of category*

Canadian Members



\$35.00 Professional
Full-time Keepers



\$35.00 Affiliate
Other staff & volunteers



\$35.00 Associate
*Those not connected with
an animal facility*



\$60 or up - Individuals
Contributing/Canada



\$100.00 or up
Institutional/Canada
*Organizations / Institutions
(requires Board approval)*



Library Only
35.00 Library
*Available only to public
& university libraries*

Zoo Affiliation (if any) _____

Zoo Address _____

Title _____

Work Area _____



My check is enclosed (AAZK, Inc.)



Please charge my credit card

MASTERCARD _____ VISA _____ Card # _____ - _____ - _____ - _____

Name on card _____ Expiration date _____

Signature _____

Mail this application to: AAZK Administrative Offices, 3601 S.W. 29th, Suite 133 Topeka, KS 66614. Make checks/money orders payable to AAZK, Inc. Must be in U. S. FUNDS ONLY. Membership includes a subscription to *Animal Keepers' Forum*. The membership card is good for free admission to many zoos and aquariums in the U.S. and Canada.

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ANIMAL KEEPERS' FORUM



The Journal of the American
Association of Zoo Keepers, Inc.

June 2000

ANIMAL KEEPERS' FORUM, 3601 S.W. 29th St., Suite 133, Topeka, KS 66614
Phone: 1-800-242-4519 (U.S.) 1-800-468-1966 (Canada) FAX (785) 273-1980

JUNE 2000
Vol. 27, No. 6

Managing Editor: Susan D. Chan • **Associate Editors/Enrichment Options**

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AAZK PUBLICATIONS - CONTINUING DATA COLLECTION

Zoo Infant Development Project - Nell Bekiars, Southern Illinois University (Birds/Passerines)

Biological Values for Selected Mammals, 3rd Edition - Jan Reed-Smith, John Ball Zoo



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About the Cover.....

*Featured on this month's cover is "Nikko", a 1.0, 17-year-old White-handed Gibbon (*Hylobates lar*) that resides at the Oakland Zoo, Oakland, CA. The artist is Amy Burgess, Lead Keeper at the Oakland Zoo. Gibbons are native to southeast Asia and along with Siamangs (*Hylobates syndactylus*) make up the primate group known as the lesser apes. Their agility in their tree-top homes is remarkable and their haunting calls can be heard over long distances. Gibbons can be found in both the light and dark color phases. They have tremendous strength and their arm length of up to 60 inches allows them to travel easily through the treetops. They are primarily herbivores but will also eat insects, bird eggs, small lizards and birds. They live in extended family groups and the female usually produces only a single infant. Thanks, Amy!*

Animal Keepers' Forum publishes original papers and news items of interest to the animal keeping profession. Non-members are welcome to submit articles for consideration. Articles should be typed or hand-printed and double-spaced. Authors are encouraged to submit their manuscripts on a disk as well as in hard copy form. Acceptable formats include: for Macintosh users - Microsoft Word or Works; IBM users - Word for Windows, WordPerfect or Wordstar. All illustrations, graphs, charts and tables should be clearly marked, in final form and should fit in a page size **no greater than 5.5" x 8.5"** (14cm x 22cm). Literature used should be cited in the text (Brown, 1986) and alphabetically in the final bibliography. Avoid footnotes. Include scientific name (as per ISIS) the first time an animal name is used. Thereafter use common name. Use metric system for weights and measurements (standard equivalents may be noted in parenthesis). Use the continental dating system (day-month-year). Times should be listed as per the 24-hour clock (0800, 1630 hrs. etc.). Glossy black and white or color prints (minimum size 3" x 5" [8cm x 14cm]) are accepted. Clearly marked captions should accompany photos. Please list photo credit on back of photo.

Articles sent to *Animal Keepers' Forum* will be reviewed by the editorial staff for publication. Articles of a research or technical nature will be submitted to one or more of the zoo professionals who serve as referees for *AKF*. No commitment is made to the author, but an effort will be made to publish articles as soon as possible. Lengthy articles may be separated into monthly installments at the discretion of the editor. The editor reserves the right to edit material without consultation unless approval is requested in writing by the author. Materials submitted will not be returned unless accompanied by a stamped, self-addressed, appropriately-sized envelope. Telephone and FAX contributions of late-breaking news or last-minute insertions are accepted as space allows. However, long articles must be sent by U.S. mail. Phone 1-800-242-4519 (US); 1-800-468-1966 (Canada); FAX (785) 273-1980.

**Deadline for each regular issue is the 10th of the preceding month.
Dedicated issues may have separate deadline dates
and will be noted by the editor.**

Articles printed do not necessarily reflect the opinions of the *AKF* staff or the American Association of Zoo Keepers, Inc. Publication does not indicate endorsement by the Association.

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Bulletin Board Access: type "aazk" in member name box;
type "Elvis" in password box.
BFR Website: <http://www.bfr.aazk.org>**

Scoops & Scuttlebutt



Contributions Help Endowment Fund Grow

As of this printing AAZK, Inc. has received a little over \$12,000.00 in donations to the recently established Endowment Fund (see February 2000 AKF - President's message). Our thanks to the following AAZK Chapters that have donated funds to the Endowment Fund: Portland, Akron, Chesapeake Bay, Sacramento, Puget Sound, Audubon, Knoxville, San Diego, Kansas City and San Antonio. The most recent donation in the amount of \$2000.00 comes from the Indianapolis Zoo AAZK Chapter. Our sincere appreciation for this great support and let's keep after the goal of "\$2000 in 2000" for all of our AAZK Chapters.

Conservation Grant Offered from Tulsa Zoo

The Conservation and Recycling at the Tulsa Zoo (C.A.R.T.Z.) Committee, in support of its conservation action plan, has announced the availability of a \$2000 grant/award for conservation related projects. A wide variety of proposals will be considered with projects from keepers/aquarists utilizing zoo and aquarium collections or facilities especially encouraged. For application materials, contact Carol Eames at (918) 669-6220 or fax (918) 669-6875. The application deadline is **1 July 2000** with award notification by 1 August 2000. A progress report will be required when the project is complete or one year after the awarding of funds.

IEF Scholarship Available for AZA Elephant School

The International Elephant Foundation (IEF), formed in November of 1998, offers a scholarship for the AZA Principles of Elephant Management Course. The recipient for this year's scholarship was Daryl Hoffman of the Buffalo Zoo, Buffalo, NY. IEF is made up of groups of individuals affiliated with zoos, circuses, universities and as well as private and commercial elephant owners. The group's purpose is to provide funding to support *in situ* and *ex situ* elephant programs. The programs include conservation, research, education and improvements in captive elephant husbandry. Scholarship applications for the AZA Principles of Elephant Management Course 2001 will be accepted until **1 July 2000**. For more information, please contact Deborah Olson, IEF, P. O. Box 366, Azle, TX 76098, (817) 444-7381; e-mail: dolson@indyzoo.com <

Primate Database Available Through PIC

The Primate Information Center's Primate Literature Database (**PrimateLit**) is now available for searching on the Web as a pilot project. **PrimateLit** indexes over 140,000 research publications from 1940 to the present. There is no charge to access the database. Instead, the PIC staff are soliciting user feedback to help guide the development of an outstanding bibliographic search tool for the primatological community. The only requirement for database access are an Internet connection and willingness to answer a short feedback questionnaire.

Access to **PrimateLit** is by password only. Please contact the PIC to obtain your free password: E-mail - pic@u.washington.edu

Subject Line: Password Request

Message: Include your full name, affiliation and e-mail address

A password and instructions for accessing the database will be sent by return e-mail.

UK Zoo Federation Offers Management Guidelines Bibliography

The Federation of Zoological Gardens of Great Britain and Ireland has just published A Bibliography of References to Husbandry and Veterinary Guidelines for Animals in Zoological Collections. The book (ISSN 1470-7322) was edited by Alastair A. Macdonald and Nicola Charlton. The bibliography "has been created as a contribution towards the better management of animals in zoological collections. It is hoped that this list of references will assist not only those keepers, biologists and veterinarians who are actively taking care of animals, but also the librarians in national, biological and veterinary libraries who are responsible for providing the books used as information for politicians and for the education of the future generations of zoologists and veterinarians."

The bibliography is a listing of information currently available which details the husbandry and management guidelines for animals in zoological collections or under captive management. The alphabetical listing of authors has been further categorized under various headings: general topics, invertebrates, amphibia, reptiles, birds, fish, mammals. The list concludes with a first contribution towards a more comprehensive bibliography of veterinary reference books on the diseases, diagnosis of disease, surgical and medical care of exotic animals."

Copies are available at a cost of £10 (exclusive of postage and packing). For one copy the postage and packing rates are: £2.00 in UK; £2.50 for Europe; £4 Worldwide zone 1 (U.S., etc.) £4.50 Worldwide zone 2 (Australia, etc.) To order please contact the Conservation Coordinator, the Federation of Zoological Gardens of Great Britain and Ireland, Regent's Park, London NW1 4RY, United Kingdom.

General telephone: 020 7586 0230

Direct telephone: 020 7449 6350

General e-mail: fedzoo@zsl.org

Direct e-mail: conservation.fedzoo@zsl.org

Fax: 020 7722 4427

PJC Zoo Animal Technology Program & Elephant Management

The Pensacola Junior College Zoo Animal Technology Program is still accepting applications for entry in August 2000. This is a two-year associate of science degree program offered as a cooperative effort of PJC and THE ZOO in Gulf Breeze, FL. Our program includes general education, a comprehensive series of academic courses in animal biology, specialized zoo topic courses, and practical animal care, medical husbandry, and exhibit repairs skills courses. Application packets may be obtained from the BJC biology department secretary at (850) 484-1168 or on the web at <http://www.pjc.cc.fl.us/academics/departments/deptbio.asp> and further information is available by contacting Joyce Kaplan, PJC Zootech Director, at jkaplan@pjc.cc.fl.us or by calling (850) 484-1164.

Additionally, spaces are available in a five-week, nine credit-hour Advanced Technical Certificate program in elephant biology and management. This program will run in July and August 2000 at Chehaw Wild Animal Park and all students with an A.S. degree from any zoo technology/zookeeping degree program are eligible. Please call (850) 484-1164 for more information.

Junior Keepers' Forum Update

The *JKF* is still looking for young members between the ages of 8-12! The *JKF* is a publication of the AAZK, Inc. and includes lots of information about zoos, animals, conservation and zoo keeping! If you have a son, daughter, niece or nephew interested in animals this is the publication for them! Each new member will receive an embroidered

patch and a year subscription (6 issues) for only \$12.00. For a sneak peek and application information access our website at <http://www.aazk.org/>

The *JKF* still needs articles and pictures from your zoo! If you have a unique animal at your facility, interesting enrichment or conservation project, or a "hands on" nature project for kids, send us a photo and one to two paragraphs! Your input helps! Contact Diane Callaway at: dianec@omahazoo.org for more information. --Diane Callaway, *JKF Editor*

AAZK Website - Info, Resources, a Chance to Help AAZK Financially

We hope you have been taking advantage of the new AAZK, Inc. Website. It is an information resource that keeps you up-to-date and in contact with your peers. Be sure to check the website regularly (www.aazk.org). It is updated monthly and is an important resource supplying the membership with things such as Committee and Chapter updates, upcoming conference information, accessible materials and publications, networking resources, research and job opportunities to name a few!

If you haven't checked it out already, be sure to go to our secured Bulletin Board page. This is a place where you can ask any zoo-related question and have it answered by your colleagues. Many keepers are already using this resource, but there are still a few questions posted without answers. Check it out - maybe you can help! (To access the Board, the passwords are "aazk" and then "elvis".) Share your expertise and knowledge!

AAZK has the opportunity to raise money while you are browsing through the website as well! At the bottom of the first page is an icon for Amazon.com. If you access Amazon's website from AAZK's and make a purchase, AAZK will receive five percent of the sale! The next time you plan on doing a little shopping, go to AAZK's site first and click on Amazon's icon!

If you have any questions or comments about the website, please contact Diane Callaway at: dianec@omahazoo.com We want this website to be as informative and user friendly as possible!

Message to the Membership - AAZK Survey

In this month's addition of the *Forum* you will find a Membership Survey. Please take the time to complete this simple questionnaire and mail it to the Administrative Offices of the Association. If you prefer, you may complete the survey online (www.aazk.org) and submit the form electronically, by following the posted instructions. The survey is located in the *Animal Keepers' Forum* portion of the website. It is important, for a number of reasons, to complete the survey so that we may get a better handle on the membership demographics. I am frequently asked questions by the media regarding median salary, minority statistics and educational levels. Completion of the survey will help us answer those questions and also help various institutions gather information on salary levels and job titles. In 1991, we ran almost the exact same survey and it will be interesting to chart any changes in the profession in the course of a decade.

The Board has ratified the Investment Strategy for your Association. We will be working over the summer to set up this investment plan to ensure the financial future of the organization. Each Chapter will be receiving a packet of materials and we will be posting the investment policy for the Association on the web page. Please take the time to read the document and return your comments.

--Ed Hansen, AAZK Executive Director

New & Renewing AAZK Professional, Institutional, and Contributing Members

New Professional Members

Wendy Anderson and Jennifer S. Hennessy, **Roger Williams Park Zoo (RI)**; Monica N. Peluso, **Animal Kingdom Zoo (NJ)**; Sal Di Stefano and Sheri Rothermel, **Philadelphia Zoo (PA)**; Kristen Tregar and Danielle Hessel, **Prospect Park Zoo (NY)**; Angelika Seissler-Williamson and Lindsay Bronson, **Seneca Park Zoo (NY)**; Jason A. Lydic, **Erie Zoological Society (PA)**; Kenneth Cole, **Jacksonville Zoo (FL)**; Janet Johnson, **Miami Metro Zoo (FL)**; Christine Miller, **Lowry Park Zoo (FL)**; Fred Gauna, **Busch Gardens (FL)**; Herb Boothby, **Caribbean Gardens (FL)**; Bill Smith, **Birmingham Zoo (AL)**; Fawn T. Ferguson, **Nashville Zoo at Grassmere (TN)**; Jenny Curtis, **International Zoological Research & Exchange (TN)**; Kelly Jo Scott, **Indianapolis Zoo (IN)**; Colette Monique and Tamara Colt, **Detroit Zoo (MI)**; Amber Jennings and Chad Pappas, **Racine Zoo (WI)**; Tina Whitney, **Brookfield Zoo (IL)**; Suzanne Smith and Walter Palmisano, **Audubon Institute (LA)**; Manda Gibson, **Cameron Park Zoo (TX)**; Kasey Skrivseth and Peggy Rittenour, **Houston Zoo (TX)**; Elana Kopel, **San Antonio Zoo (TX)**; Shoma Michael, Tim Brest and Lisa Tate, **Zoo Boise (ID)**; Leslie Waters, **Reid Park Zoo (AZ)**; Stephanie Zielinski, **Los Angeles Zoo (CA)**; Nina Goodwin, **Oakland Zoo (CA)**; Caroline Nork, **The High Desert Museum (CA)**; Eleanore S. Sato, **Cat Tales Zoological Park (WA)**.

Renewing Contributing Members

Elliott Schwab, Volunteer
Memphis Zoo & Aquarium
Memphis, TN

Lynn Peckham, Docent
Los Angeles Zoo
Los Angeles, CA

Renewing Institutional Members

Seneca Park Zoo
Rochester, NY
Lawrence Sorel, Director

Brookfield Zoo Library
Brookfield, IL
Mary Rabb, Librarian

Out of Africa Wildlife Park, Inc.
Fountain Hills, AZ
Dean Harrison, President

New Institutional Members

International Exotic Feline Sanctuary
Boyd, TX
James R. Gilberth, Executive Director

MOVING ?

Please let us know when you change your address!! It costs AAZK 99¢ every time an AKF is returned because of an incorrect address. Call 1-800-242-4519 (U.S.) or 1-800-468-1966 (Canada) to report your new address. THANKS !!

Coming Events

Animal Trainers Network Workshop - June 11-13, 2000. Cincinnati Zoo. Early registration will be provided for those arriving on the evening of June 10. Interested parties, please contact Dawn Strasser, Cincinnati Zoo at (513) 281-4700 ext. 7710; Jane Anne Franklin, Louisville Zoo at (502) 459-2181; or Adriion & Valerie Haft, Cincinnati Zoo at (513) 281-4700 ext. 8356.



Animal Behavior Society Annual Meeting

August 5-9, 2000 in Atlanta, GA, co-hosted by Morehouse College and Zoo Atlanta. Along with contributed talks and posters, the meetings will include special symposia on "Dispersal Behavior" and invited papers on "Comparison Between Primates and Cetaceans". Plenary speakers include Chris Boake, Hugh Drummond and Dee Boersma. For further info see: <http://www.animalbehavior.org/ABS/Program/>

21st Annual Conference of the Association of Avian Veterinarians (AAV) - Aug. 29- Sept. 2, 2000 in Portland, OR. To request a registration brochure, complete the form on the conference web page: www.conferenceoffice.com/aav

Association of Zoo Veterinary Technicians Annual Conference - Sept. 6-10, 2000 in Orlando, FL. To be held at Disney's Coronado Springs Resort, Lake Buena Vista, FL. For conference information contact: Kerri Bolling, Disney's Animal Kingdom, phone: (407) 938-2869; e-mail: Kerri.Bolling@disney.com For AZVT membership info contact: Lisa Cree, CVT, White Oak Conservation Center, 3823 Owens Road, Yulee, FL 32097; e-mail at Lisak@wo.gilman.com

American Association of Zoo Veterinarians - Sept. 17-21, 2000 in New Orleans, LA, in conjunction with the International Association of Aquatic Animal Medicine. For additional information, please contact Wilbur Armand, VMD, Executive Director/AAZV, 6 North Pennell Rd., Media, PA 19063; Phone - (610) 892-4812; Fax - (610) 892-4813; or e-mail at - 75634.235@compuserve.com<

Association of Zoological Horticulture Annual Conference - Sept. 30-October 4, 2000 in New York City. Will include study trips to Bronx Zoo and three other zoos as well as paper sessions; AZH 20th anniversary party; pre-conference tour to Longwood Gardens, Morris Arboretum and Philadelphia Zoo. For registration packet contact Rob Halpern, Bronx Zoo (718) 220-5164 or rhalpern@wcs.org

Elephant Managers International Conference - 6 - 9 October 2000 in Syracuse,

NY. For more information please contact Adrienne Whiteley on: bpzoo@emi.com

Association of Zoo and Aquarium Docents (AZAD) - October 11-15, 2000 in Cincinnati, OH. Hosted by the Cincinnati Zoo. Interested parties should contact Norma Cole at 9419 177th Place NW #2, Redmond, WA 93052-6933 or at NicoleOrca@aol.com

Panda 2000 International Conference - October 16-19, 2000 in San Diego, CA. Hosted by Zoological Society of San Diego and World Wildlife Fund. A program consisting primarily of workshops, panel discussions and poster sessions is planned. Topics in conservation, education, training, research, health, reproduction, and captive management will be covered. For info contact Helena Fitch-Snyder, Zool. Soc. of San Diego, PO Box 120551, San Diego, CA 92112. Phone: (619) 557-3954, FAX: (619) 557-3959; E-mail: helena@sandiegozoo.org.

Carnivores 2000: A Conference on Predator Biology and Conservation in the 21st Century - November 12-15, 2000. Hosted by the Defenders of Wildlife at the Omni Interlocken Hotel in Denver, CO. For more information contact: Carnivores 2000, Defenders of Wildlife, 1101 14th St., NW, Washington, DC 20005 or call (202) 789-2844 ext. 315 or e-mail: nfascione@defenders.org<

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AAZK 2000: BEGINNING A NEW MILLENNIUM

Columbus Zoological Gardens

October 8 - 12, 2000

Powell, Ohio



Conference Notes and Reminders

- Please remember that the deadline for conference registration is 1 September 2000. The deadline for hotel reservations is 1 September 2000 as well. Conference Registration Forms as well as hotel information may be found in the April 2000 issue of *Animal Keepers' Forum* in the green pull-out insert. This insert will appear again in the July 2000 issue of *AKF*.
- Oops! We goofed! The credit card information was left off of the registration form. If you wish to charge your registration fee to your credit card, you may go to the Conference website <http://aazk2000.homestead.com> and print out the Registration Form found on the website. If you do not have web access, you may contact Gretchen Bickert at (614) 645-3429.
- We are taking reservations for Exhibitors Tables. Please contact Gretchen Bickert at gbickert.colzoo.org or at (614) 645-3429 as soon as possible if you are interested.
- Many exciting sponsorship opportunities are available. Any amount your Chapter would like to donate would be wonderful. We need sponsors for the following: breaks, hospitality suite evenings and for international keepers (flight cost, lodging). Please contact Beth Pohl at (614) 645-3400 or Bpohl@hotmail.com for more information. Thank you!
- The official Conference airline is America West. Discounts vary from 5% - 10% depending on how early you make your reservations. Reservations may be made by calling 1-800-548-7575; use Group Code 6363.
- The official Conference Hotel is the Adams Mark Columbus. The daily rate for a single or double is \$99.00; \$114.00 for a triple; and \$129.00 for a quad. Reservations may be made by calling 1-800-444-ADAM. Mention reference code AAV 007 to get discounted rate. Check the website for additional hotel sites.

PRE AND POST CONFERENCE TRIPS

PRE-CONFERENCE TRIP

CLEVELAND ZOO AND SURROUNDING AREA - Friday, 7 October

Overnight trip to the Cleveland area. The day will be spent at the Rock 'n Roll Hall of Fame, Great Lake Science Center and the Omnimax Theater. Spend your evening dining on your own in the Flats area of Cleveland. Delegates will then spend the night in the zoo's Wilderness Cabin. Saturday will be spent touring the zoo. Cost includes: Friday breakfast, overnight lodging, Saturday breakfast, lunch and transportation to and from Cleveland.

COST \$45.00 - *special thanks to Cleveland Zoo and AAZK Chapter for sponsoring most of this trip!*

POST-CONFERENCE TRIPS

THE WILDS—Friday, 13 October

Day trip to The Wilds. The Wilds is located in Cumberland, OH and is North America's largest conservation facility. The tour will include open range view of wildlife from around the world. The trip cost includes transportation, light breakfast, lunch, tour of the Wilds and afternoon snack. Return to Columbus same day. This trip is limited to 45 people.

COST\$30.00

THE WILDS & HOCKING HILLS

Depart from the Wilds to the Hocking Hills. Includes transportation, dinner, overnight lodging Friday and Saturday, meals on Saturday and breakfast on Sunday. Lodging is at the Woodland Suites at Old Man's Cave Chalets. Each Woodland Suite overlooks the forest, has a private hot tub, microwave, small refrigerator, stove top burner and outdoor grill. Each suite sleeps four people. October is an awesome time for hiking and for observing the changing colors. This is truly one of the prettiest areas of Ohio. Return to Columbus Sunday afternoon. This trip is limited to 25 people.

COST\$175.00



REACTIONS

A Question and Answer Forum for the Zoo Professional on Crisis Management

By William K. Baker, Jr., Zoo Curator
Frank Buck Zoo, Gainesville, TX

Question

What should I expect when a crisis occurs?

Comments

A crisis event is something that every professional hopes never happens in their career, yet inevitably at some point each of us will probably face one. With increasing numbers of zoological facilities joining the field every year and with them an increasing number of professionals, it is a safe bet that incidents will continue to increase, not decrease. The basis of resolving and surviving a crisis is dependent on a few simple factors: communication, teamwork, and skill.

The most common form of crisis management situation that will be faced by a zoological professional is an animal escape situation. This is not to say that escapes are the cornerstone or foundation of crisis management, they are simply the most common. It only means that these types of situations are an easy target for discussion.

Once an escape occurs it becomes quickly evident whether or not the previously mentioned attributes are in effect. The radio frequency should be clear once an emergency code has occurred, if you hear mass hysteria on the air when looking at your radio, be afraid, be very afraid. Because the tone for how the incident will be addressed, if at all, has just been established. Conversely, if you hear calm controlled voices dispatching instructions and resources, things will more likely than not work out for the best.

The criteria for resolving an incident can best be described by the SERC concept, which stands for Situation, Evaluation, Response, and Conclusion.

Situation - Identify what has happened in a clear, concise manner, and what is the current status.

Evaluation - What options and resources are available to resolve the situation.

Response - Select a decisive course of action that will present the least threat potential.

Conclusion - Restablish normal operations and analyze the cause of the incident.

Ideally, there should be one person in charge who has a combination of skills in leadership, animal management, and crisis resolution. The staff should be trained and prepared with the equipment and resources to effect a resolution. If everything goes the way it's

supposed to, tensions will run high, animal myopathy will be low, and the event will last less than fifteen minutes. Afterward, at the end of the day everybody can go out for drinks and slap each other on the back and relive the drama, and for years to come you can wow your peers at conferences about that day.

However, if an individual stays in the zoological profession long enough, it's likely that they will encounter several crisis management situations throughout their career. Unfortunately, the odds are good that at some point there will come a time when the actual management of a crisis event fails.

The reason for failure can be as simplistic as poor judgment by the on-site manager, poor communication, or a lack of teamwork to resolve the situation or a combination of these factors. Regardless, the sad truth is that the attempt at resolution has failed. Now comes the moment of truth in which several factors will have to be addressed by the institution. Respectively in order, these would be staff, media, politics, and animal collection.

Staff

The staff of a zoological institution is more often than not like an extended family. As a result, what impacts one member of the staff has a direct impact on the rest of the staff. This is the critical factor that many zoological facilities often lose sight of with the current trend of employing individuals with no animal experience in management. They fail to see the bond, which unites us as professionals who are dedicated to the common goal of conservation. It is therefore critical that the emotions of the staff be taken into consideration when responding to their grief, especially if it involves the injury or death of a staff member.

After the particulars of the event have been established during the review process, a general staff meeting should be held to inform everyone exactly what has happened and how the situation is being addressed. This will prevent conjecture and the spread of rumors. Signs of post-traumatic stress should be expected and facility management should provide counseling to any staff member who requests it. Many municipally-based zoos have an Employee Assistance Program (EAP) in place and the staff should be reminded that this service is available. Zoo management should be sensitive to individual emotions and the general morale of the staff. Remember that these are the people who make you look good. Also, remember to heighten safety awareness at the facility, as distracted personnel could lead to a second crisis.

Media

Expect the worst. Everything negative that has ever occurred at your facility will be brought to light to see if it can have any possible bearing or if a pattern is associated with your current situation. Expect disgruntled ex-employees to be interviewed for their "expert" opinion, never mind the circumstances of their departure. Realize that the staff will likely be hounded by the press for their comments or observations while recovering from the incident. Expect to be misquoted and for the reporters to show up in restricted animal areas of the facility as they search for the truth. Also prepare for the inevitable onslaught by the animal rights groups that will once again question the need for captive animals.

The best solution is to hold a press conference in which a written statement is presented in conjunction with a presentation of the facts by a designated spokesperson who will handle the media until the matter is closed. Hopefully your institution has established a positive relationship with key members of the local media so that you will have access to unbiased reporting. Also, these key media personnel will be familiar with facility operations, jargon, and the staff. It's a relationship well worth cultivating. Also remember that there is no such thing as "off the record".

Politics

Probably the most distasteful part of the whole experience is the politics. Expect some level of departmental in-fighting, rivalries, and blame placement from within your institution. Also expect and anticipate some level of pressure and accountability from senior governmental officials if your institution is part of a municipality. Realize that there is usually someone in the government who will look for someone to blame and will utilize this for political advantage. This is the point at which the Director must take a stand and show clear leadership on behalf of the staff and in defense of the facility. Directors ideally should be like the captain of a ship, responsible for anything that occurs under their command. If anyone is to bear the blame, it's the Director. Besides, if there is an USDA or APHIS investigation, let me assure you that it's the Director they will come to first.

Animal Collection

If the loss of life within the incident concerned a member or members of the collection then the inevitable problem will be finding replacements. At times like this, other facilities can be a godsend in handling temporary housing for surviving members of an area after a manmade or natural disaster or in helping to locate replacement specimens. We are part of a larger community than just our individual facilities. If specimen(s) were injured, then the same applies. I have yet to find an incident in my career where a veterinary staff has failed to assist another facility. Remember that they believe in what they're doing too.

Conclusion

If all the above sounds pretty bleak in retrospect, then have faith. Because the good news is that your facility will weather the storm and in time the pain fades. The media and the politicians will find new horizons to contemplate. New staff members will join your zoo family bringing fresh ideas and new life - thus keeping the fire burning and hope alive. The really good news is that more often than not most facilities do resolve a crisis with a fair degree of success. This comes more often than not because experienced staff members are on hand. They have been around the block a few times and time is on their side. In short, they know what they are doing. Most people in management positions got to where they are based on skill and experience. There are exceptions of course to this rule, but in general you know what I mean. A little faith in someone can go a long way in a crisis. That's what inspired the title "Reactions" back in the beginning of this column years ago. We are defined by our actions and reactions to life's events. It's all about faith in ourselves and each other. Because without faith, communication, and teamwork, what chance does conservation really have?

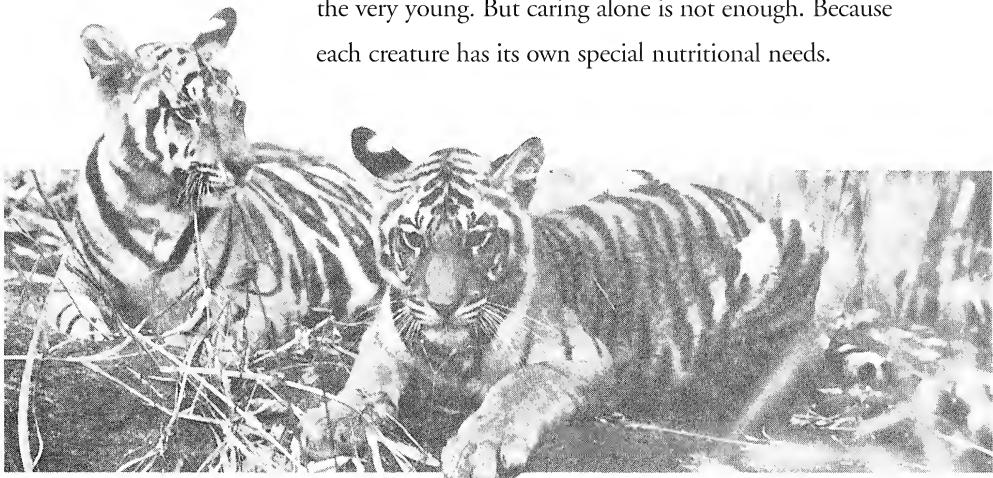
Next Month: What technical aspects should you look for in a cat management facility?

If you would like to submit a question for this column or have comments on previously published materials, please send them to: AAZK, Inc., 3601 S.W. 29th St., Suite 133, Topeka, KS 66614 Attn: Reactions/AKF.

(About the Author: Since 1985 Bill has been active in the fields of science, zoology and wildlife management. His education and experience include a B.S. in wildlife management and post-graduate studies in zoology, Lab and Museum Assistant, Shoot Team Leader, ERT Member, Large Mammal Keeper, Senior Keeper, and Zoo Curator at various zoological facilities. His area of research is crisis management in zoological institutions, which draws upon practical experiences and training as a Rescue Diver, Hunter Safety Instructor, NRA Firearms Instructor, and Red Cross CPR/First Aid Instructor.)

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Legislative Update

Compiled by Georgann Johnston
Legislative Advisor
Sacramento, CA



Interior Department Forms Invasive Species Advisory Committee

Secretary of the Interior Bruce Babbitt recently announced the formation of a 32-member Invasive Species Advisory Committee (ISAC). The purpose of the committee is to help direct the federal government's war on feral wildlife. The committee is comprised of nine people from the academic sector, nine from industry, seven from public agencies and six from so-called "anti-invasive species" groups. No member represents the interests of any humane animal group.

The ISAC will work closely with The Nature Conservancy, a nonprofit group that attempts to return portions of habitat back to their "original" condition by eliminating introduced, non-native species of plants or animals. The initial target of the ISAC will likely be a plan for the Channel Islands - off the coast of Southern California - which are overrun with feral sheep and feral pigs.

A study undertaken in 1999 by the U.S. Geological Survey found that at least 6,500 alien species are thriving in the United States. Some biologists, conservationists and ecologists claim that these species are maintaining biodiversity much more than harming it. Others claim that the species are harming native wildlife and need to be eradicated. The ISAC will be making recommendations not only on the feral species to be targeted, but the method by which they will be eradicated. Again, conservationists fear that the use of poisons, pesticides, herbicides and the like will be used for a "quick fix" without regard for the long-term consequences.

Creating the ISAC resulted in doubling the \$28 million budget of the U.S. Department of Agriculture Wildlife Services Branch (formerly called Animal Damage Control). However, despite the additional funding, it is unlikely that any action taken by or on behalf of the ISAC will be completely effective. A study done by the United Nations Convention on Biodiversity reported that "There are no records of global extinction of a continental species due to invasive species."

Other species that may be targeted by the ISAC include coyotes, ornamental fish, groundhogs, snakes, and rabbits. Further information on the ISAC's actions will be forthcoming in future issues of *Animal Keepers' Forum*.

Source: Animal People: News for People Who Care About Animals March 2000

Argentina's Government Creates Protected Forest

The government of Argentina has passed legislation creating a "green corridor" of nearly 2.5 million acres of protected forest running the length of the Misiones Province. This corridor connects two existing parks in neighboring Brazil. The parks and the corridor provide a home to jaguars, ocelots, hundreds of bird species, and many rare orchids found nowhere else on earth.

The legislation was sponsored by the World Wildlife Fund and the legislation was finally signed into law in late 1999. "To safeguard and reconnect fragments of forest in Misiones

is a critical part of our efforts to protect Atlantic Forest biodiversity," said Jaiver Corcuerá, director general of Fundación Vida Silvestre Argentina. "This landmark legal status will help protect a unique forest habitat and the wildlife it shelters."

Source: FOCUS, a publication of The World Wildlife Fund March / April 2000

Whale and Dolphin Sanctuary Created in the Mediterranean

The countries of France, Monaco, and Italy have recently signed a treaty creating the first whale sanctuary in the Northern Hemisphere. The sanctuary covers approximately 32,424 square miles and is bounded by the French Côte d'Azur, Monaco, the Ligurian coast of Italy and the northern border of Sardinia. It surrounds the island of Corsica and is roughly twice the size of Switzerland.

The treaty creating a sanctuary for whales and dolphins calls for the three signatory governments to coordinate monitoring activities and to intensify actions against any land-based or marine sources of pollution. The area is a prime feeding ground for 13 different cetacean species including the pilot whale, fin whale, sperm whale, common dolphin, striped dolphin, bottlenose dolphin, and Risso's dolphin. In fact, this area alone provides a home for two to four times as many whales and dolphins in the rest of the Mediterranean Sea.

Source: Focus, a publication of The World Wildlife Fund March / April 2000

Tibetan Antelope May Be Added to Endangered Species List

The U. S. Fish and Wildlife Service (USFWS) has reviewed a petition submitted by the Wildlife Conservation and the Tibetan Plateau Project of the Earth Island Institute and has determined that it may be appropriate to add the Tibetan antelope as endangered under the U.S. Endangered Species Act. This antelope, also called a "chiru", is native to the Tibetan Plateau in China and in small areas of northern India and western Nepal. The USFWS report states that as recently as 50 years ago there were 500,000 to 1 million antelope found on the Plateau, but those numbers have dropped to as low as 65,000 individuals today.

The reason for the decline is primarily because the antelope are killed for their wool - known in the international fashion world as "shahtoosh". Since the 1980s shahtoosh shawls and scarves have become high fashion status symbols in western countries. The increasing demand for the wool in turn increased the number of animals poached for their skin. Unfortunately, there are no cases of "capture and release" wool collection methods. International trade in shahtoosh or shahtoosh products has been illegal since 1979 under the provisions of CITES. An additional problem for the antelope is the ever-increasing numbers of livestock grazing on the same land.

A workshop on the plight of the Tibetan antelope was held by the Chinese government in late 1999. Speakers called for increased vigilance on the part of CITES signatory countries to extinguish the trade in shahtoosh products. Additionally, a plan for public education programs was set forth. Subsequently, at the latest CITES Convention, a resolution was adopted asking all CITES signatory countries to make every effort to reduce or eliminate trade in the antelope or antelope parts.

Source: U.S. Fish and Wildlife Service News Release, 26 April 2000

Blackbirds Get Last Minute Reprieve from Government Slaughter

In March 2000, the USFWS set forth a five-year plan to poison blackbirds. The U.S. Department of Agriculture (USDA) had planned to cooperate with the USFWS by using poisoned rice to kill the birds as they migrated northward throughout the upper

Midwestern United States. However, after a battle in Congress spearheaded by the National Audubon Society, the USDA's plan was scuttled.

During their return in October and November from their northern summering grounds, blackbirds and other bird species feed on cultivated sunflower seeds, some of which are grown to be packaged and sold as birdseed. Smaller-scale poisonings during the fall months have been carried out for a number of years by the USDA but have not had a measurable effect on bird populations. With the proposed spring poisoning, the USDA had hoped to kill the blackbirds before the sunflowers were even planted.

While blackbirds are protected under the Migratory Bird Treaty Act, the USDA has been allowed to carry out the fall poisonings on the basis that the birds are an "agricultural pest". To poison them in the spring, however, before the sunflowers are planted, the USDA had to frame the project as a scientific experiment that then placed it under the jurisdiction of the USFWS.

In addition to being concerned about the number of blackbirds killed by the broad-spectrum rice poisoning plan, conservation groups and other authorities worried about its indiscriminate nature. For example, many of the sunflower fields adjacent to the rice fields are visited by as many as 68 other species of grassland songbirds, including declining species such as the bobolink and the chestnut-collared lingspur.

The USDA will continue to practice its fall poisoning program while it attempts to adapt the spring poisoning project to meet USFWS guidelines for scientific experimentation.

Source: Audubon Advisory Online 14 April 2000

O'ahu 'Elepaio Added to Endangered Species List

A songbird thought to be a guardian spirit for Hawaiian canoe makers - the O'ahu 'Elepaio - was added to the endangered species list on 18 April 2000 by the USFWS. The bird was once widespread in the forested areas throughout the island of Oahu but it is currently found only in mid-elevation forests in portions of the Koolau and Waianae Mountains - less than four percent of its original range.

In Hawaiian legend the bird helped canoe makers judge the quality of koa logs that were to be made into canoes. If the bird landed on the log and pecked at it, the wood was considered to be of poor quality. If it landed on the log and simply sang, the log was considered sound. Since the bird is an insectivore, its ability to identify insect-infested wood made it a valuable resource to early Hawaiians.

Primary threats to the bird are disease (avian pox and malaria) and predation by introduced mammals, especially rats. Other known threats include storms with high winds that destroy nests and habitat degradation and loss caused by both human impact and non-native pigs.

Under the Endangered Species Act, the next step is to develop a recovery plan to overcome threats to the species. Recovery strategies for listed species often include controlling key threats, monitoring of existing populations, and increasing the number of individuals and populations through natural or artificial means.

Source: USFWS News Release 4/18/2000

CITES Meeting Results: Some Winners and Some Losers

Delegates at the CITES meeting last month rejected attempts by Norway and Japan to "overturn an international ban on the commercial trade in whales". Support for continued

whale protection was stronger than when similar proposals were advanced at the meeting in 1997. Meanwhile, Reuters reported on 17 April that four southern African nations had agreed to delay a vote on reopening the ivory trade "until an effective system is in place" to protect elephants from poaching.

Despite "majority support" from the 150 nations attending the U. N. Convention on International Trade in Endangered Species (CITES) meeting, trade protection for giant sharks including the great white, basking and whale was rejected. The proposal to restrict trade in sharks, championed by the U. S., U. K. and Australia, failed to get the two-thirds vote necessary for adoption after the fishing lobby successfully enlisted Asian and Latin American countries to oppose any trade restrictions.

The 11th meeting of the CITES wrapped up with delegates rejecting an attempt by Cuba to "sell off its stockpile" of hawksbill turtle shells. The conference also banned all international trade in Australian dugongs (seacows) and African spurred tortoises. Asian box turtles and wild sheep called urial received less protection with trade in them restricted by a system of permits. The conference also enacted a total trade ban on coelacanths, "a living fossil" once thought to be extinct. Other species, where proposals to ban trade were rejected, included Black Sea bottlenose dolphins, musk deer and 13 species of tarantula spiders found in India and Sri Lanka.

Source: Excerpted from reports by the Associated Press and Reuters News Service through GREENlines Issues # 1111, 1113, and 1114, April 18, 20 and 21, 2000.

For further information on what happened at the CITES meeting, go the website of WildNet Africa at <http://www.wildnetafrica.com>

Don't miss this opportunity - the Africa Trip could fill any time. Reserve your place on the first AAZK African Safari NOW !

**American Association
of Zoo Keepers**

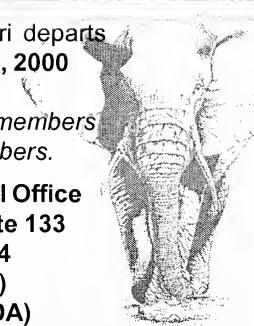
14 - Day conservation and education safari

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contact: AAZK, Inc. National Office
3601 S.W. 29th Street, Suite 133
Topeka, Kansas 66614
1-800-242-4519 (USA)
1-800-468-1966 (CANADA)



ABC'S

Animal Behavior Concerns & Solutions

A Question and Answer Forum for the Zoo Professional

By Diana Guerrero, Independent Behavior Consultant,
Ark Animals of California, San Diego, CA

Question

American Zoo. Can you give us some guidelines regarding parrot training?

Answer

Any type of training program has the same components to it regardless of what species of animal you are working. Sometimes we seem to get caught up in having to know what specifically has been done with certain species or in training certain behaviors rather than exploring and being open to innovation.

Don't misunderstand! It is critical to do research so that you have the base knowledge of knowing the history of work done with particular species or behaviors. Doing this will help you shortcut the process. However be careful not to get into being solely focused on being a "specifics specialist" since in the area of behavior there are many dynamics and approaches you can take that would be overlooked if you had too narrow of a scope to pull from.

In some of the past ABC'S columns there have been discussions and outlines on what it takes to set up a training program. It would benefit you to review some of those since I don't think repeating the same answers would be useful here.

Should you wish to provide additional information on the species, specific information or the application you are working on, I would be glad to outline a more detailed approach. In the meantime, here are some tidbits for you to chew on:

Develop Understanding of Influencing Components

Within each animal grouping there are many different types of behaviors and social needs. Parrots and other birds have some differences in how they react or respond. Therefore you would need to develop an understanding of the species, their social interactions, natural behavior, and the individuality or sensitivity of your animal. These are important components to any training program.

Parrots are social and non-predatory animals. Since they are very bright you will want to keep the interest level high and keep moving forward with your training. Long sessions or repeating behaviors once they are learned can sometimes work against you. Keep sessions short, focused, and interesting!

In the beginning use both a verbal and visual cue. (Many birds seem to respond to a visual cue better than to a verbal one.) Later you can faze either one out or alternate the use of the command. Verbal cues can be used for emphasis or during situations when you are having trouble with a response.

Define Your Objectives

There are also many different types of training scenarios or applications. I am guessing that you are interested in show behaviors or related types of interactions that would be of interest to your visitors or perhaps for educational purposes or even show performances.

As in any training application you will have to define what it is that you want to accomplish. Detail the steps and determine how you will approach the situation and who will be training the animal. You will want to teach the "Step Up" command and maintain consistency with this basic but important behavior. "Step Up" or some related command should be used whenever you pick up a bird.

Birds will often use their beaks like a third foot to help them balance. Pulling your hand away can indicate you are unreliable or fearful. If you are hand shy you might want to stick train your bird first. (Where you train them to step up on a long stick rather than on your hand.) This helps avoid giving mixed messages.

Since many species can become aggressive during the Spring or when hormones are raging, you might consider using a stick consistently to help with any fluctuations during breeding season or maturity. Once the bird steps up on the stick on command, you can start to train your bird to step up on command onto your hand. Do this on a T-stand away from their cage first. That is also where you may want to begin your basic training.

Research Training and Background

You will want to research the species and what has been accomplished so far within the industry or within related industries such as the pet trade. Gathering information on the animal is also important. A naive animal is different than training a veteran. Wild-caught can be different from a captive-bred. Mother-reared can be different from hand-reared. The more you can pinpoint what types of responses or behavior that you will be dealing with, the more successful you can become.

There are a variety of books and videos out there that would be useful. I happen to think the videos are better since many of the books just focus on the pet behavior aspect —the training videos seem to be of more use to a wider audience.

Resources

Unfortuantely without more specific information on what species and behaviors you are looking for it is impossible to give you a more specific outline. Please refer to the following resources that would be useful to you and your organization.

Although I have attempted to give you a variety of resources, most of these relate more to the average pet owner or those in the pet trade — but they are very useful. You might also contact any of the specialists I have listed for further assistance or staff training.

Natural Encounters, Inc.
Parrot Videos Dept. 300
P.O. Box 29309
Brooklyn Park, MN 55429

1-800-834-9639

The Positive Approach To Parrots As Pets
Tape 1: Understanding Bird Behavior \$39.95
Tape 2: Training Through Positive Reinforcement \$39.95
Set of 1& 2: \$69.95
Parrot Care And Training \$39.95
Kings Of The Wind \$19.95

Tape 1: Understanding Bird Behavior

Gain insights and develop a better understanding of your pet parrot while attaining the best relationship with your bird. Steve Martin shares his years of experience to help you deal with challenging problems like biting and screaming. Discover the formula for "interpreting virtually any behavioral situation with your bird." Part of the tape covers how wild parrot behavior applies to captive parrots.

Tape 2: Training Through Positive Reinforcement

Work on your positive reinforcement training techniques. This tape provides you with the tools necessary to teach your bird almost any behavior. Featured birds include an African Fish Eagle, a Seriema, an Abyssinian Ground Hornbill, and a Ruppell's Griffon Vulture. Training skills can be used with any species of bird.

Parrot Care And Training

This tape focuses on information for the pet parrot owner. Covers health care, diet, daily maintenance, taming and prevention and correction of parrot behavior problems. Features both trained and untrained birds to clearly demonstrate how to tame and train a new bird. How to train behaviors include a kiss, a wave, free flying on cue, going to the bathroom on cue and more.

Kings Of The Wind

State Fair of Texas show features natural bird behavior. Offers the viewer a glimpse into the Natural Encounters free-flight bird show.

Robar Productions
Dept. TR
3767 S. 194th
Seattle, Washington 98188

The following videos are available
for \$24.95 plus \$2.50 S&H per video.

Video 1

"Fantastic Performing Parrots" This video presents a variety of bird tricks. Species featured include a green-cheeked conure, a blue-crowned conure, a black-headed caique, an African grey and a crimson-winged parakeet.



Video 2

This video presents basic training techniques that are essential for any trick training. Using positive reinforcement methods the topics covered are: appropriate rewards to use, how to give commands and signals, what constitutes a tame bird, the training area, length of training sessions, and step-by-step demonstrations of how to teach your parrot those first important tricks: the turn-around, shake hands, the wave (hello, goodbye, salute), the kiss, wishing well, forward rolls, the dismount, and backward flips, plus others.

Video 3

Video 3 builds on the training techniques presented in Video 2. Video 3 shows you how to teach the retrieve, ring on the peg, basket ball, coin in the bank, puzzle board of

shapes, ringing a bell, raising the flag, and the pull toy. Playing dead, juggling a ball, holding a baby bottle, and the parrot cocktail is explained and shown. Also includes the roll over and somersault. Other innovative behaviors are shown and explained.

Video 4

The final video in the series builds on the methods and tricks shown in the previous videos. Topics include: taking a bow; nodding head 'yes' and shaking head 'no'; the expanded use of the commands 'come' and 'perch'; falling over backward when 'shot'; pushing objects, (baby buggy) pulling objects (wagon), riding a scooter, turning a crank, bowling, the shell game trick, and explanations of how various combination tricks shown in Video 1 were put together, plus more.

Bird Lady Productions

P.O. Box 540248

North Salt Lake, UT 84054

(801) 295-9093

FAX (801) 295-9216

Chris Davis is an old pal of mine. She is also one of the best known and most respected pet avian behaviorists. She has a couple of videos you might be interested in.

Training Your Parrot The Alex Way! \$39.95 + \$5.00 S&H

Demystifying Pet Bird Behavior. \$34.95 + \$5.00 S&H

Training Your Parrot The Alex Way!

"Alex" the African Grey is featured with Dr. Irene Pepperberg's training techniques "communication rather than mimicking." Chris Davis adapts Dr. Pepperberg's technique to train other parrot species.

Demystifying Pet Bird Behavior. Examples of what she can assist you with are the problems of properly socializing your new baby, weaning, advice on taming the wild or unruly pet, and food, toys, caging, etc.,

(About the Author: Since 1978, ARKANIMALS.COM Director, Diana Guerrero has worked professionally in a variety of animal facilities. Attending and completing courses in both animal management and training from institutions both here in the United States and Europe, she has been affiliated with some of the best organizations. She is an alumni of The Moorpark College Exotic Animal Training & Management Program, The Gentle Jungle Animal Affection Training School, The International Training Centre at the Jersey Wildlife Preservation Trust, and special program extensions with Marwell Zoological Park and Kent University. Guerrero started her career in the marine mammal field working as a naturalist, and subsequently became involved with terrestrial animals in zoos and other facilities. Guerrero writes a variety of animal-related columns, including the popular series, Unusual Animal Careers and does seminars nationally. Watch for two of her book projects in the summers of 1999 and 2000! Questions for ABCs should be submitted to Diana directly via e-mail:> arkabc@arkanimals.com< or via regular mail to ARKANIMALS.COM, P.O. Box 1154, Escondido, CA 92033 USA.)

Now Available

Resources for Crisis Management in Zoos and Other Animal Care Facilities

AAZK, Inc. is pleased to announce the availability of its newest publication - *Resources for Crisis Management in Zoos and Other Animal Care Facilities*. This reference work is an anthology of articles by authors from zoo keepers to veterinarians to zoo directors to public relations specialists. The works of 56 authors from these diverse zoological perspectives brings together information and resources for planning a crisis management program for your facility or for augmenting an existing program. The 424-page volume includes a foreword by Sydney J. Butler, Executive Director of the American Zoo and Aquarium Association.

The book's chapters are arranged by the following subject topics: Factors That Influence Crisis Management in a Zoological Setting; Developing An Emergency Preparedness Plan; Emergency Response and Crisis Management Teams; Public Relations and the Crisis Situation; Animal Restraint and Animal Identification Techniques; Dealing with A Crisis Situation (Zoological Crisis, Natural Disasters, and Manmade Disasters); Injury and Death at the Zoo; and Taxon-Specific Crisis Management Protocols. This important work also includes an extensive Appendix and a listing of suppliers and equipment vendors. AAZK has gathered the best of existing articles on crisis management and expanded the text with originally solicited materials on Zoonotic Disease: Risk Appreciation and Biosafety, Meteorological Aspects of Disaster Planning, The Weapons Response to a Zoological Crisis Situation, The Process of Exhibit Design and Construction: How It Affects Crisis Management, etc. The book includes the results of the first-ever North American Crisis Management Survey as well as Case Studies showing how zoos reacted in various crisis situations and what was learned from their experiences. A must for every zoo professional!

To order fill out the form below and return with your payment to: AAZK, Inc., CMR, 3601 S.W. 29th St., Suite 133, Topeka, KS 66614 U.S.A. Checks and money orders should be made payable to: "AAZK, Inc." (U.S. FUNDS ONLY). If using a credit card, make sure to complete all requested information on form. Prices are: AAZK Members \$45.00 Non Members \$60.00. Prices include domestic Book Rate Postage. Orders outside the continental U. S. should add \$10.00 for parcel post surface shipping.

CRISIS MANAGEMENT ORDER FORM

(Please PRINT)

I wish to order ____ copy (ies) of *Crisis Management Resources* (Please Circle) AAZK Member \$45.00 Non Member \$60.00

Name: _____

Address: _____ City: _____

State/Province: _____ Zip/Postal Code: _____ Country: _____

I wish to pay by: Check/money order Mastercard Visa

Credit Card# _____ Expiration Date: _____

Name as it appears on credit card (please print) _____

Signature: _____ TOTAL ENCLOSED \$ _____

AAZK WORKPLACE SURVEY 2000

This survey is intended for people who currently work in the animal care profession. This may not necessarily mean your typical zoo or aquarium accredited by the American Zoo and Aquarium Association. If you currently are working in an animal or aquarium facility, open to the general public or by appointment, please take the time to fill out this short survey. Answer the questions to the best of your ability and be truthful, as the results will be published. Survey results may be distributed to individuals or groups that desire generic salary, education, minority and work title information.

BACKGROUND

1. Are you? Female Male

2. When asked to qualify your ethnic background on various

forms, how do you generally respond?

African American

Hispanic

American Indian

Caucasian

Asian Origin

Other _____

3. How old are you? 18-25 26-35 36-45

46-55 56- up

4. Please check the box which best applies to your education level

High School Some College A.A. Degree

Bachelor's Degree Advanced Degree

11. Please list your specific title _____

12. What best qualifies your current salary level? (American \$)

\$15,000 - \$20,000 \$20,000 - \$25,000

\$25,000 - \$30,000 \$30,000 - \$40,000

\$40,000 - \$50,000 \$50,000 - \$75,000

\$75,000 - \$100,000 \$100,000 - up

13. How long have you been in the zoo and/or aquarium profession? _____

AAZK INFORMATION

14. Are you an AAZK Member? Yes No

Professional Associate
 Affiliate Contributing

15. Have you been to a National AAZK Conference?

Yes No

16. Have you visited the AAZK Web Page Yes No

17. Are you in a local AAZK Chapter? Yes No

18. Is your facility an Institutional Member of AAZK?

Yes No Don't Know

1st Class
Stamp Here

**TO: AAZK Survey
3601 S.W. 29th St., Suite 133
Topeka, KS 66614 USA**

ZOO/AQUARIUM INFORMATION

5. In what State/Province is your facility located? _____

6. Would it best be described as an:

Aquarium or Zoo or Both

7. Is the facility Private Public

8. Is your facility AZA accredited?

Yes No Pending/Tabled

9. Please qualify the size of your facility

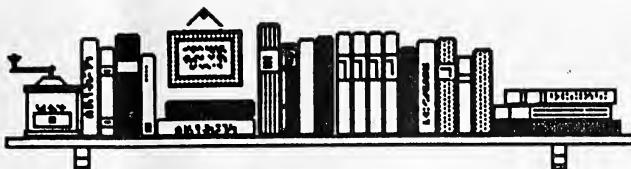
Less than 10 acres 10-15 acres 20-50 acres
 50-100 acres 100 acres or more

POSITION AND SALARY

10. What category best reflects your current title?

Zoo Keeper/Aquarist (Works Daily w/Animals)
 Senior Zoo Keeper/Senior Aquarist (As above,
w/Field Supervision)
 Maintenance/Landscape
 Veterinary Technician
 Foreman/Supervisor (Directs Animal Care,
Writes Evaluations/Performance Appraisals)
 Registrar
 Collection Manager
 Curator/Assistant or Associate Curator
 Management Professional (Would Include Director,
Asst. Director, Vet, Research, etc.)
 Other _____

Add a sheet of paper and fold into survey if needed. Fold sheet in thirds, return address side out, tape shut (DO NOT USE STAPLES) or place in an envelope and return to address on reverse side of this form. THANK YOU.



Book

Review

Animal Underworld. Inside America's Black Market for Rare and Exotic Species

By Alan Green

The Center for Public Integrity. Public Affairs, Washington, DC

October 1999. Hardcover, 320 pp. \$25.00

ISBN: 1-891620-28-2

*Review by Nell Bekiaries, graduate student
Animal Sciences/Zoology Department
Southern Illinois University, Carbondale, IL*

While this book's title may sound intriguing, few keepers will find this an enjoyable read. The goal of this work is to expose shady deals and poor animal welfare. The publicity announcement included the following statements: "Prepare yourselves for a rude awakening. What you will read in this book will break your heart and make your blood boil. Alan Green...reveals gross atrocities committed against the animal kingdom by naming names and shining a bright light on a sickening and lucrative web of corruption."

What the book effectively did, however, is alienate individuals, zoos, dealers, conservation programs, organizations, and federal agencies. No one connected to trade or handling of exotic species went unscathed. You may even find your own zoo or connections mentioned here.

Green wrote 12 chapters and 283 pages of material suitable for recycling. It's a shame that labor and materials were invested in the publication of this book.

Not only did I find this book personally offensive, I also found it difficult to read. The writing style is a poor stream-of-consciousness rambling. Sentences, paragraphs, and chapters lack structure and theme. It is as if Green's sole objective was to name drop as much as possible.

I was hoping that the source notes and acknowledgements section might be of some redeeming value. Unfortunately, that was not true. For as specific as the stories were, sources were vague.

I would not recommend this book unless you are dissatisfied with your zoo career and are considering a career with PETA. The only truth to the publicity announcement was that the book made my blood boil with its sensationalistic untruths and half-truths.



By Gretchen Ziegler, Sequoia Park Zoo
and Jan Roletto, Utah's Hogle Zoo

Rhino Enrichment

After a January snow, the day was nice enough to let the rhinos out. So, I built a snowman for our Indian rhino (*Rhinoceros unicornis*). It had apples for eyes, a carrot nose, banana for a mouth, and some fresh cut pine tree branches for arms. The snowman was about 4' 6" tall and it was a great success. Joya stayed and sniffed it from 1200-1530 hours when it got cool out and he went back inside. The first thing he went for was the arms, then the fruit, and he finally crushed the snowman altogether.

We also gave our Southern white rhino (*Ceratotherium simum simum*) large snowballs in their indoor enclosures. They crushed them with their horns, rubbed their noses in them, and slid them around their pens.

Following is a sequence of photos depicting the events after our rhinoceros was introduced to the snowman. *Photos by Tim Hays and Brenda Gunder.*



Photo 1: This is when 1.0 Indian rhino Joya was released into his outdoor enclosure with the snowman.



Photo 2: He has eaten the pine branch arms off, and is now sniffing the snowman to see what else is there.

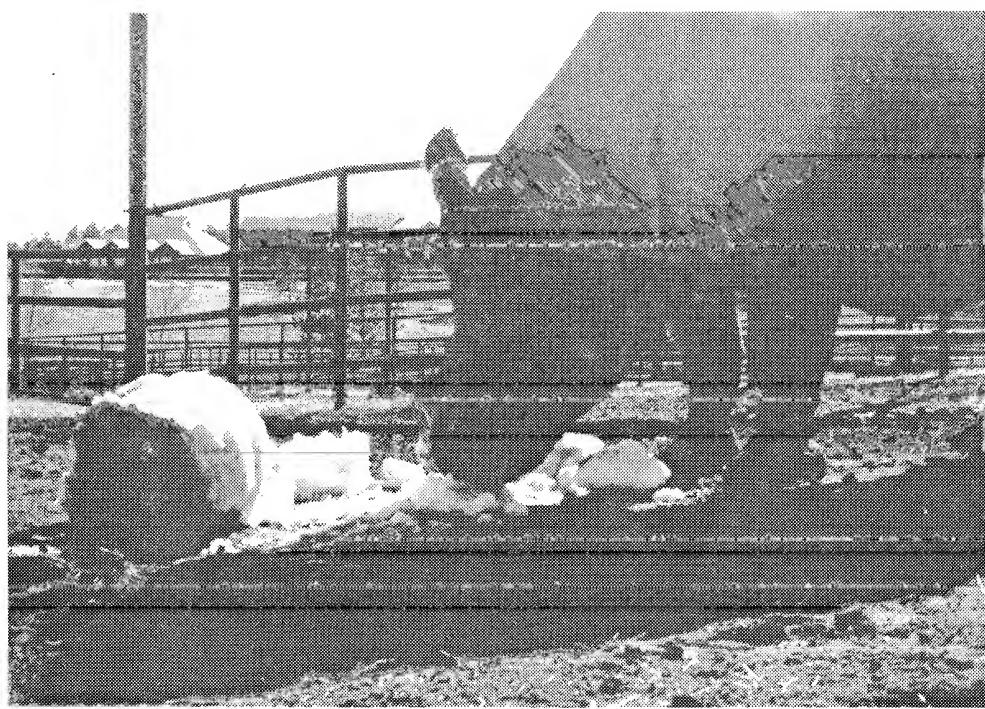


Photo 3: By this time he has eaten all of the fruit and the head, and has smashed it all except the bottom ball. Later, he trashed it completely!

Rhino Enrichment

—submitted by Tim Hays, Large Hoofstock Keeper
Rolling Hills Refuge & Wildlife Conservation Center, Salina, KS

You are invited to submit material for the Enrichment Options Column. This might include recipes, toys, puzzle feeders, olfactory enrichment ideas, etc. Drawings and photos of enrichments are encouraged. Send to: AKF/Enrichment Options, 3601 S.W. 29th St., Suite 133, Topeka, KS 66614.

(Ideas appearing in this column have not necessarily been tested by the editors for safety considerations. Always think ahead and use good judgement when trying new ideas. Eds.)

Visit the new AAZK Enrichment Website - www.enrich.org/aazk or to join the Enrichment Listserve by e-mail jackbell@humboldt1.com
An archive of past postings can be viewed at www.caza.org/enrich.

Additional Enrichment Websites to check out....

Environmental Enrichment in Captive Marmosets and Tamarins
<http://arrs.envirolink.org/psyeta/hia/vol8/buchanan.html>

<http://mommensj.web2010.com/menvirn.htm>

Environmental Enrichment Scrapbook
<http://www.well.com/user/abs/dbs/eesb/>

Environmental Enrichment (EE) for Captive Animals
<http://www.iwec.org/enrichment.htm>

Environmental Enrichment for Primates
http://www.animalwelfare.com/Lab_animals/biblio/enrich.htm

Environmental enhancement of caged Rhesus Macaques
<http://www.primate.wisc.edu/pin/pef/slides/intro.html>

Social Enrichment
<http://www.cwu.edu/~cwuchci/enrichment.html>

The Shape of Enrichment
<http://enrichment.org/publication.html>

Animal Enrichment
<http://www.geocities.com/RainForest/Vines/8435/ak/enrich/index.htm>

Arkanimals Enrichment Page
<http://www.arkanimals.com/E/Enrich.html>

Environmental Enrichment for Captive Animals (Links)
http://www.well.com/user/elliotts/smse_enrich.html

Articles on Environmental Enrichment and Psychological Well-Being
<http://www.brown.edu/Research/Primate/enrich.html>

Environmental Enrichment: Does It Reduce Barbering in Mice?
<http://www.nal.usda.gov/awic/newsletters/v8n2/8n2deluc.htm>

Environmental enrichment for laboratory mice: preferences and consequences
<http://pablo.ubu.ruu.nl/~proefsch/01801846/inhoud.htm>

Environmental Enrichment Information Resources for Laboratory Animals
<http://www.nal.usda.gov/awic/pubs/enrich/intro.htm>

Environmental Enrichment — Operant Conditioning (List)
<http://www.primate.wisc.edu/pin/owagner.html>

Environmental Enrichment
<http://www.wwwebspace.co.uk/~abwak/enrich.htm>

Environmental Enrichment Information Resources for Nonhuman Primates
<http://netvet.wustl.edu/species/primates/primenv.htm>

Annotated Bibliography on Environmental Enrichment for Nonhuman Primates
http://www.animalwelfare.com/Lab_animals/biblio/

Zoo Husbandry and Research: An Integrated Approach
<http://arrs.envirolink.org/psyeta/hia/vol8/pastorello.html>

Paignton Zoo Enrichment programmes
<http://www.paigntonzoo.demon.co.uk/PROJECTS.HTM>

Oregon Zoo Enrichment programmes
<http://zooregon.org/cards/Enrichment/enrich.htm>

Environmental Enrichment for Captive Wildlife Through the Simulation of Gum Feeding
<http://www.nal.usda.gov/awic/pubs/primates/4n3kelly.htm>

Behavioural Enrichment
http://www.wolfpark.org/Links_enrichment.html

Using Inexpensive Feeding Equipment and Techniques for Primate Enrichment
<http://www.psyeta.org/hia/vol8/rice.html>

Primate Enrichment Forum
<http://pantheon.yale.edu/~seelig/pef/>

CAZA Enrichment Listserve Archives
<http://www.caza.org/enrich/>

Readings and Resources on Environmental Enrichment
http://www.vetmed.ucdavis.edu/Animal_Alternatives/enrich.htm

The Nuts to Bolts of Captive Chimpanzee Diets and Food as Enrichment: A Survey
<http://www.psyeta.org/jaaws/v2n3.html>

Orangutan Enrichment
http://www.orangutan.com/ar_enrichment.shtml

Los Angeles Zoo Elephant Enrichment
<http://lazoo.org/elephants/b-e.html>

--from ZooNews Digest with special thanks to Peter Dickinson

AAZK Publications Available

AAZK Diet Notebook, Mammals

This reference work contains 325 diets representing 213 species and subspecies from fourteen participating institutions. The diets are arranged by taxonomic order using ISIS numbers in a durable and attractive three-ring D-style binder. Each Diet Response Form included contains the following information: common name, scientific name, ISIS number, the contributing individual, their institution, how long the diet has been used, whether the animals have bred while on the diet, the diet ingredients, instructions for preparation, notes and remarks, special considerations and nutritional analysis (if available). The Diet Notebook is a copyrighted publication of AAZK, Inc. Cost is AAZK Members \$40.00; Nonmembers \$55.00; and Institutions \$70.00. These prices represent **prepaid** order prices and include postage for the U.S. and Canada. Overseas orders should add \$20.00 for parcel post surface shipping. ISBN# 1-929672-00-4

Zoonotic Diseases, Second Edition

This 40-page reference work details the most common zoonotic diseases, offers guidelines for preventive control and covers personal hygiene and disinfection procedures. Information for each disease is presented in text format which includes: Ethiologic Agent, Means of Transmission to Man, Global Distribution, Alternate or Intermediate Hosts, Human Incubation and Human Symptoms. Cost is \$6.50 for AAZK members; \$10.00 for Non-members. This price includes domestic shipping. Orders outside the U.S. and Canada should add \$3.00 per copy for air mail postage. ISBN# 1-929672-01-2

Zoo and Aquarium Professionals: The History of AAZK

This 216-page volume chronicles the first 25 years of the American Association of Zoo Keepers, Inc. from its beginnings at the San Diego Zoo in 1967. Included in the book is the early evolution of the Association, its projects, programs and committees, the histories of its 70-plus Chapters, and its involvement in two highly successful conservation programs - "Bowling for Rhinos" and the Ecosystem Survival Plan's Conservation Parking Meters. Cost is \$5.00 for all orders and includes domestic postage. Orders outside the U.S. should add \$3.00 per copy for postage. ISBN# 1-929672-04-7

What Kind of Animal Are You?

This charming collection includes zoo keepers' favorite anecdotes about their work, their animals, and the zoo visitors with whom they come in contact. This 40-page volume, edited by John Stoddard and originally produced by the Brookfield AAZK Chapter, contains chapters entitled Keepers and Their Charges, The Great Unwashed, Good Question, Misidentified & Mispronounced, Phone Calls, ZooLingo, Murphy's Laws of Zoo Keeping, and Clever Animal Names. This humorous, and sometimes irreverent, look at the world of zookeeping is sure to bring a smile to your face. Available for \$5.00 for AAZK Members; \$8.00 for Non-members. Price includes domestic postage. Orders outside the U.S. should add \$3.00 for air mail postage. ISBN# 1-929672-05-5

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Primate Food Sharing Behavior and Its Relationship to Panhandling in Captivity

By

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and

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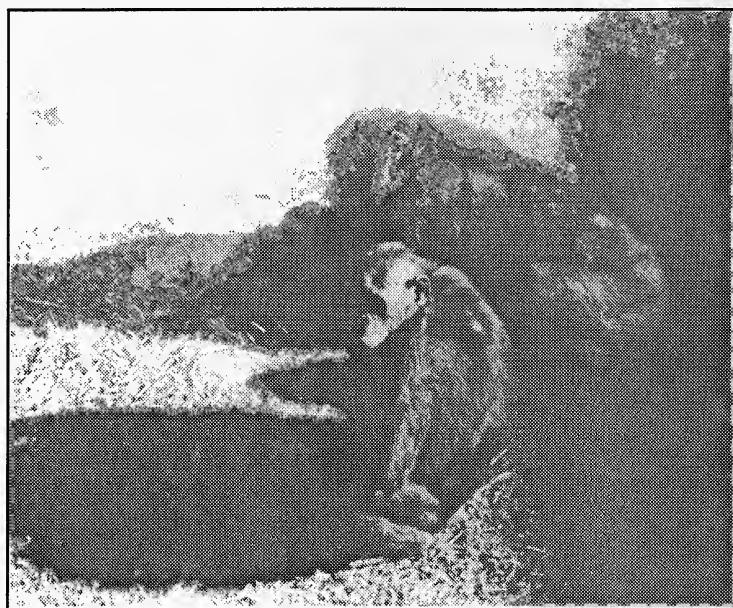
Jacksonville Zoological Gardens, Jacksonville, FL

One of the most crucial activities for all animals is the procurement of food. Foraging, gathering, predating, and even stealing and sharing of food are some ways that animals carry on the daily work of survival. Primates are no exception in their needs for food. The quality and quantity of food affects reproductive success among primates (Gaulin & Konner, 1977) and the literature reports a great deal of primate behavior and social ecology associated with food acquisition. Acquiring food has a bearing on primate species movement within their home range and territory as well as their interactions with conspecifics and others that share their living space. Finding food is a daily activity for all primates each season of the year and the quantity and quality of food available for survival is indeed a high priority in the wild. As primates are social animals, it may not be surprising that there have been observations of food sharing among some species, although this phenomena has not been observed to be wide spread.

The literature reports observations of food sharing behavior to a greater or lesser degree in some primates. A sampling of reports include: Brown and Mack, (1978) of golden lion tamarins (*Leontopithecus rosali*); Feistner and Price (1991) of golden-headed tamarins (*L. chrysomelas*); Feistner & Price, (1990) of cotton-top tamarins (*Saguinus oedipus*); Kavanaugh, (1972) of douc langurs (*Pygathrix nemaeus*); de Waal, Luttrell and Canfield (1993) of capuchin monkeys (*Cebus apella*); Starin (1978) of titi monkeys (*Callicebus torquatus torquatus*); Nettlebeck, (1997); Schessler & Nash, (1977); and Berkson & Schusterman, (1964) of gibbons (*Hylobates lar*); Orgeldinger (1994) of siamangs (*Hylobates syndactylus*); Schaller, (1963) of gorillas (*Gorilla gorilla*); de Waal, (1989); Goodall, (1986;1968); Silk, (1979); Nissen and Crawford, (1936) of chimpanzees (*Pan troglodytes*), and White (1994); Hohmann & Fruth, (1996;1993); Kuroda, (1984); of bonobos (*Pan paniscus*).

Factors such as food type, availability, age, sex, and social relationships among the animals determine whether food sharing will occur. For example, Nettlebeck (1997) reports that wild gibbons rarely beg or share food and this occurs only for foods that are scarce or difficult to obtain and/or manipulate. Adult gibbons however, rarely share food voluntarily in the wild according to Schessler & Nash (1977) and may share food in order to teach appropriate food habits. Goodall (1986) notes that adult chimpanzee males share food with females and occasionally with their infants. She reports that wild chimpanzees always share meat. Food will be shared by mothers of infants younger than 2 1/2 to 3 years of age. Infants chimpanzees are allowed to take bites of food from mother's hand with little resistance or the mother will give

the infant food from the hand. Sharing of chewed food from mouth to mouth was observed as well. For other examples and discussion see Hohmann & Fruth (1996); Price & Feistner (1993); de Waal (1989); Kuroda (1984); Moore (1984); and McGrew (1975).



Bonobos (*Pan paniscus*) are primates with sharing and begging behaviors in their behavioral repertoire. (Photo by Jayne Tardona)

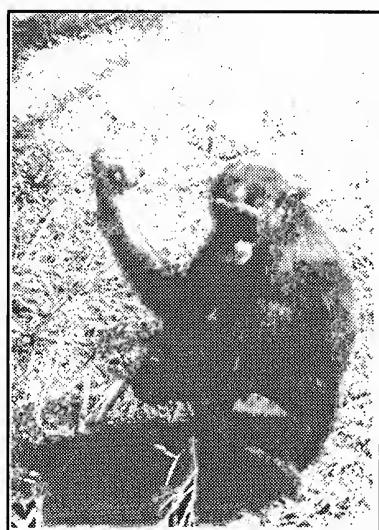
The focus of this paper however, is on what sometimes occurs before any sharing takes place. Often associated with food sharing behaviors are various forms of begging behavior. Among lion tamarins, infants may beg for food by trying to take food with their hands and at the same time loudly vocalize (Price & Feistner, 1993). Chimpanzees at Gombe Preserve have been observed to engage in food sharing and begging behavior (Goodall, 1986). Begging for food by chimpanzees has been observed in the wild to the extent that begging by one individual becomes so intense as to become an impediment to the individual possessing the food (Goodall, 1986). Goodall, (1986) observed that leaf-meat wadges (a wadge is skin, fibers or seeds mixed with fruit, meat or eggs that are squeezed and sucked by the animal until all the juices have been removed) are often deposited in the outstretched hand of a begging individual or transferred from mouth to mouth. Tantrums and continued begging may then be rewarded as the possessor of the food finally relinquishes.

Begging for food is not necessarily motivated by hunger, at least among gibbons as suggested by Schessler & Nash (1977) who observed captive gibbons to leave a food item that was easily in their reach and traverse across the exhibit to beg for the same item from another individual. These authors suggest that begging and subsequent food sharing may help to reinforce social bonds between immature and adult members of a family group as well as to teach appropriate food habits to young individuals.

The question that arises then, is that even though rare, in those primates who

exhibit begging, is this behavior more pronounced in captivity than in the wild for a given species? In particular, is begging behavior more or less apparent among the great apes and lesser apes compared with other species of primates in zoo environments? What is the relationship between food begging behavior in non-human primates and their human primate interactors in the captive environment? There appear to be no reported cases of interspecies food begging behavior among primates in the wild unless we consider those instances where wild primates have been food enhanced by human primates for the purpose of study. Comparative food begging studies of individual species in their wild and captive environments may yield useful information regarding differences in primate social hierarchies, physical health, stress and interactions between individual animals and their siblings, parents, zoo keepers and even visitors to primate exhibits. It may be that food begging behavior among some captive primates whose behavioral repertoire includes such behavior in their wild environment may be easily engaged when human primate onlookers observe the behavior and reinforce it by feeding because "she must be hungry." It seems a short jump from begging behavior in wild situations with conspecifics to panhandling behavior in an attempt to acquire a "freebie" food or perhaps some interesting novel edible or inedible item. It may be those primates with a natural propensity for food begging in their wild social environment and hardwired in their behavioral repertoire may be particularly susceptible to generalizing begging to panhandling in the captive setting. It seems an especially easy transition for chimpanzees and bonobos whose natural begging behaviors include holding out a hand with palms faced up (Goodall, 1986; de Waal, 1989). It may be that primates, especially chimpanzees and bonobos, elicit such feeding behavior from human visitors thereby creating and sustaining, via conditioning, a potentially detrimental situation for the animal in terms of diet and behavior. Perhaps the engagement of such behavior by the animal somehow even affects the social behavior of the group in captive group settings. It may even be that engaging in such behavior may be an attempt at stress alleviation in some instances. When food items are used as enrichment for food sharing primates, do well meaning keepers, inadvertently reinforce begging behavior of some individuals in their daily enrichment activities or even feeding duties? Perhaps it is a behavior that the human primate is "hardwired" to respond.

A clearer insight into the human psychology that allows primates (and other animals) to elicit feeding from the human primate may also prove valuable for captive animal management. Primate food begging or "panhandling" is important and fertile ground for research in the captive setting, especially in zoo environments where there are ample opportunities for interactions with visitors to primate exhibits. When designing exhibits for those primates with food sharing



The Bonobo's begging behavior among conspecifics may be easily transformed into "panhandling" from human visitors in a captive setting.

(photo by Jayne Tardona)

and begging behaviors in their behavioral repertoire, consideration should be given as to the possibility of such animals being able to reach any items that are offered by visitors. The solution might be to include an interpretive/educational sign that explains food sharing and begging behaviors of such primates and the potential harm visitor behavior may cause by engaging the animal in this way. This is but one example of the complexity of animal management in captive settings that should be addressed. Solutions to these and other related captive animal management challenges can best be met after careful research into the behavior of captive and wild primates, behavioral interactions between captive non-human primates and with their human caregivers as well as human visitors to their exhibit areas.

**Bonobo (*Pan panicus*)
“panhandling” from
human visitors at a
primate zoo exhibit.**

(Photo by Jayne Tardona)



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ORANG-UTANS GIVEN 10 YEARS

The *London Daily Telegraph* reported in early May that conservationists are being warned that unless Indonesia soon "acts" orang-utans will be extinct in 10 years. Once numbering 315,000, the population on their main stronghold, Borneo, has been halved since the early 1990s to barely 15,000 by forest fires, illegal logging and palm plantations. On Sumatra, the remaining population has declined to 6,000 in less than a decade.

Chapter News Notes

Little Rock Zoo AAZK Chapter

New officers for 2000 are as follows:

President.....Megan Stringer
Vice President.....Daphne Brock
Secretary.....Kim Beldin
Treasurer.....Britt Thompson
Liaison.....Debbie Thompson

Nineteen-ninety-nine was a great year for our Chapter. We purchased a scale to weigh our new red pandas, sent nine keepers to conference, made donations to the Enrichment Notebook and the National AAZK, bought a VHS camera, six camera and remote sending units, and four TV/VCR combos. The camera units are being used to monitor baby bush dogs in the den, baby maned wolves in the den, and hopefully a giraffe birth expected shortly.

In October we sold Glo-lites™ at the annual Boo at the Zoo event. The Conservation Committee put up a parking meter to raise funds for Partners in Conservation to benefit the gorillas and people of Rwanda. We also had a bake sale, a Bowling for Rhinos event, and continue to recycle aluminum cans around the zoo.

We hope that 2000 will be as good if not better than 1999.

—Kim Beldin, Secretary

AAZK Milwaukee Chapter

In February of this year, we held our elections for new term officers. Elected were:

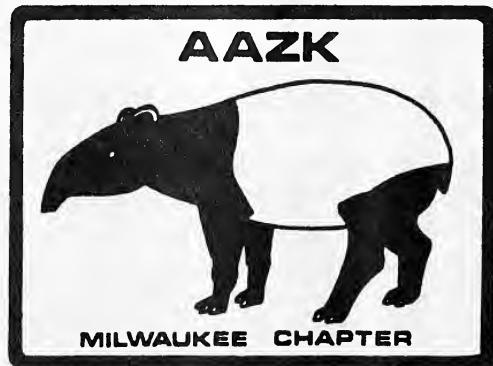
President.....Karen Rabideaux
Vice President.....Clay Ecklund
Secretary.....Mark Scheuber



Treasurer.....Lisa Gugliemli
Chapter Liaison.....Earl Conteh-Morgan

In February we held our annual Valentine's Bake Sale and raised \$383.00. Goodies were baked by keepers and volunteers, and all were consumed rather quickly. The money raised will be donated to help purchase veterinary supplies for about 400 endangered elephants from Indonesia. Because of human-elephant conflicts, these captured elephants are currently being housed in the Elephant Training Centers in Sumatra.

*—Earl Conteh-Morgan,
Chapter Liaison*



Birmingham AAZK Chapter

Many exciting things have been happening at the Birmingham Zoo. A big welcome to our new Director, Bruce Read. We also welcome many new enthusiastic members to the Chapter as our newly privatized zoo fills many vacant keeper positions. And they had the opportunity to show off their bowling skills at our Annual Bowling for Rhinos event which was held on May 20.

We are helping to raise money for the zoo by handling the sale of the zoo's ratite eggs on the Birmingham Zoo website (www.birminghamzoo.com).



Our Chapter is supporting conservation through donations to the Cahaba River Society, Hornbill Nest Adoption and Black-footed Ferret Reintroduction Programs. We are also recycling aluminum cans (staff, volunteer and public donation) for the Enrichment Fund.

Keeper Encounters are underway as well. This program enables members of the public to meet the keeper staff and get behind-the-scenes tours of the zoo. Last year this program raised over \$500.00 to be used for in-house projects.

We also plan to create our own Chapter website in the near future.

Our new officers for 2000 are as follows:

President.....Heidi Fisher
Vice President.....Cindy Pinger
Secretary.....Denise Monroe
Treasurer.....Michelle Herman
Chapter Liaison.....Renee Gainer

Our Chapter is anticipating an exciting year for the Birmingham Zoo.

--Renee Gainer, *Chapter Liaison*

Lincoln Park AAZK Chapter

The Lincoln Park Chapter of AAZK will hold their 11th Annual "Bowling for Rhinos" Bown-a-thon on Sunday, 16 July, 2000 at 5:30 p.m. at the Marigold Bowl in Chicago.

For a sponsor sheet and ticket information please call: Cindy Swisher at (312) 902-3491.

Does Your Chapter Have a Website?

Having a Chapter website is a great way to not only keep your members informed about what is happening in your Chapter, but also to share information with other AAZK Chapters on successful fundraising projects, worthy conservation efforts, etc.

If your Chapter has a website, we would like to have the website address so that we can share it through the pages of the *Forum*. Send website addresses to Susan Chan at AO.

The Association has established a set of guidelines for Chapter websites. If you do not have a copy and wish to make certain your website adheres to these guidelines, contact AO for a copy. Call Barb at 1-800-242-4519 (U.S.) or 1-800-468-1966 (Canada).

The Use of Environmental Enrichment in Pinnipeds

*By Michelle Pywell, Senior Keeper
Colchester Zoo, Witham, Essex, England*

Hello Everybody. I've worked at Colchester Zoo for five years. Those of you who know me, also know the sea lions I have devoted myself to, or you could have helped me with the extensive survey that I compiled a couple of years ago on the husbandry, diet, training and breeding of pinnipeds in captivity.

Below shows the numbers of those who took part in the survey:

Number of surveys posted	125
Number of completed surveys	66
Number that could not complete the survey	6
Number of non-respondents	53

The 66 collections that took part came from all over the world. The surveys were very detailed and the response showed a great interest. They were completed by Directors, Curators, Keepers and Trainers.

Below shows the total of pinnipeds reported in the survey:

Species	Males	Females	Unknown	Total
South American sea lions (<i>Otaria flavescens</i>)	12	25	0	37
California sea lions (<i>Zalophus californianus</i>)	53	129	2	184
Australian sea lions (<i>Neophoca cinerea</i>)	0	1	0	1
African fur seals (<i>Arctocephalus pusillus</i>)	2	3	0	5

I asked: What forms of enrichment do their pinnipeds receive? Nineteen percent (19%) provided no enrichment. Eighty-one percent (81%) experimented with many forms. I'd like to share everyone's ideas and thoughts with you. Hopefully this will encourage people to communicate with each other.

Why provide enrichment? Pinnipeds spend a lot of time interacting with one another. They are socially active marine mammals and when they are kept in large social groups they can behave naturally and stimulate their own lives. In this case, enrichment would not be as critical, Emmen Zoo has 21 sea lions, so they use very little enrichment.

However, when pinnipeds are kept in small numbers they can become bored in a static environment as they do not have a mixed group with which to interact. They need to be stimulated so they keep mentally and physically active, taking notice of their environment and exploring and engaging in play sessions.

By far the most popular form of pinniped enrichment was training. Many collections agreed that the best form of enrichment for pinnipeds is training through positive reinforcement. The animals get attention, challenges and food rewards. We can encourage natural behaviors such as porpoising. The 1.2 South American sea lions I train now know 30 different behaviors each and enjoy taking part in the three regularly scheduled daily displays. They tend to learn new behaviors more quickly than I can think of them.

Other forms of enrichment that work for most pinnipeds:

- Food scattered around pool, thrown from different places.
- Plastic tubs of different sizes, containing food
- Basketballs (not ones that can be pierced or consumed)
- Buckets and Brooms (usually when your back is turned!)
- Fish frozen in blocks of ice.
- PVC tubes with fish inside
- Live fish

As you can see the most popular items are food enriched. Although each pinniped is very much an individual, most males surveyed were only interested in the above. Some pinnipeds enjoy:

- Chasing a hose pipe.
- Lettuces and marrows
- Kelp
- Rubber tires
- Music
- Braided ropes
- Boxes, milk crates
- Life saving rings
- Felt strips on hose pipes
- Two crates containing fish, tied together



Why should enrichment be used? I believe that animals need routine for their own security and peace of mind, so training and interacting with the sea lions that I work with takes place at the same time each day.

I then introduce other forms of enrichment at random times in different rotation. This prevents the sea lions from getting used to them which may lead to them ignoring the items completely.

I always take the enrichment away at night and do not introduce enrichment toys when the sea lions are interacting with each other, e.g. sunbathing or courting. Enrichment is also withheld if the sea lions appear uninterested as at times of late pregnancy, etc.

Summary

I believe pinnipeds benefit from interacting with their keepers and being introduced to new items to stimulate them. This is especially true when they are kept in small numbers and there is limited interaction between them. We can ensure our animals feel safe and secure in their environment while being kept fit and active in an enjoyable way. All materials must be chosen with care so they do not come apart, choke or harm the pinnipeds in any way.

I encourage all of you working with pinnipeds to try new enrichment, using your imagination and the intelligence of these playful creatures. Most of all have fun and share those ideas!

Anyone wishing a copy of the complete survey results may write to me at:

Michelle Pywell, 12 Guithavon Road, Essex, CM8 1HD, England.

Koala Census Opportunity Available

Since 1994, the Zoological Society of San Diego, in conjunction with the Australian Koala Foundation (AKF), has been organizing teams of representatives from interested zoos to assist in collecting field data in Australia with regard to koala habitat utilization and tree species preferences. The data gathered will be analyzed to develop regional models for habitat use by koalas and to subsequently complete further computerized Geographic Information System based mapping specific to koalas called the 'Koala Habitat Atlas'.

Two field expeditions in 2000 are currently being offered to zoo representatives interested in participating in this koala conservation effort. Proposed dates for the expeditions are as follows:

1. August 12th -27th in north-central New South Wales in an area determined as high priority by the NSW Koala Recovery Team.
2. September 30th - October 15th to the Strezelecki Ranges area of southern Victoria.

Accommodation during the field work may be in dormitory type facilities with participants helping to prepare group meals. Total costs incurred by each participant include \$750 U.S.(which covers all meals, accommodation and travel costs during the field expedition), plus airfare and any extra costs incurred outside of the actual field work, such as hotel and meal expense before or after the field work is complete. Spaces are limited and will be filled on a first come first serve basis.

Any interested representatives should contact Valerie Thompson by mail, fax, phone, or e-mail as listed : Valerie Thompson, Associate Curator of Mammals, San Diego Zoo, P.O. Box 551, San Diego, CA 92112-0551; phone (619) 685-3226, fax (619) 232-4117, e-mail vthompson@sandiegozoo.org

Announcing. . .

AAZK Enrichment Notebook

Second Edition Revised

The AAZK Enrichment Notebook, 2nd Edition, was designed to be user friendly and to provide the kind of information needed to build a comprehensive enrichment program. The AAZK Enrichment Notebook, 2nd Edition, is a tabbed, 3-inch binder with 213 pages (many of them duplexed) of enrichment information (plus an index) which includes an overview of enrichment, a resources and suppliers list, links to enrichment information, sample enrichment forms in use at various institutions, guidelines for enriching various taxa (reptiles, birds, primates, carnivores, ungulates and bats), risk assessment and safety issues, a browse plant list, a toxic plant list, cookbook recipes, an enrichment idea catalog that includes all entries from the original AAZK EnrichmentNotebook plus new submissions, and institutional contacts.

The AAZK Enrichment Committee will be working on a bibliography and a tab has been provided for this future project. A Table of Contents and Index make it easier to access the information. You may purchase the entire binder or just the notebook "guts" to update a previously purchased AAZK Enrichment Notebook. The AAZK Enrichment Notebook was designed to be a "living document" with ample space for future AAZK Enrichment Committee projects and/or other information gathered by you or your institution.

To order, fill out the form below and return with your payment to: AAZK, Inc., Enrichment Notebook, 3601 S.W. 29th St., Suite 133, Topeka, KS 66614 U.S.A. Checks and money orders should be made payable to "AAZK, Inc." (U. S. FUNDS ONLY). Allow 4-6 weeks for delivery. If using a credit card, make sure to complete all requested information on form. Prices include Domestic Book Rate Postage. Orders outside the continental United States should add \$15.00 for parcel post surface shipping. Prices are:

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“Guts” only \$25.00

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Wildlife Breeding Resource Centre Launches Lion AI Project

The application of artificial insemination to, and the DNA analysis of the lions at the Lion Safari Park.

The Wildlife Breeding Resource Centre (WBRC), a working group of the Endangered Wildlife Trust (EWT) and the Lion Safari Park have entered into a joint project, funded by Tau Lodge (Madikwe) and the Lomas Wildlife Trust to develop artificial insemination as a conservation tool for the maintenance of genetic diversity and population health in African lions (*Panthera leo*).

Isolated lion populations, such as the Ngorongoro Crater lion population, have been observed to suffer the effects of inbreeding, resulting in a decline in reproductive performance and reduced disease resistance. In Southern Africa there are a number of game reserves whose resident lion population is isolated from other populations. In order to prevent and counteract inbreeding, new genetic material may be infused into an existing isolated population by means of either translocating unrelated individual animals between isolated populations, or by artificially inseminating females using sperm from unrelated males in other populations.

Translocating males between populations may present problems with introduced males being killed by the resident males, killing newborn cubs or being pushed out of the reserve, resulting in possible severe consequences for both the lion(s) and surrounding communities. Disease transmission also reduces the availability of "clean" lions for relocation.

Artificial Insemination (AI) has been used to produce cubs in captive big cats, including cheetah, ocelot and tiger. AI has to date not been used in lions to infuse new genetic material into a captive/free-ranging lion population. The WBRC/EWT and the Lion Safari Park have therefore initiated this project to develop artificial insemination as a tool to aid in the prevention of inbreeding and genetic diversity loss in the African lion. Techniques developed on the resident lion population at the Lion Safari Park may, at a later stage, be applied to wild lion prides.

The objective of this project is to develop assisted reproduction as a conservation tool for the African lion as a means of counteracting inbreeding in lion prides. This entails collecting and banking sperm from genetically valuable males, vasectomising over-represented males using the epididymectomy technique, establishing the reproductive cycle of the lion using non-invasive (fecal) monitoring techniques and artificially inseminating unrelated females. The end results of this project will include increased data available on lion reproduction and the birth of cubs from artificial insemination using sperm collected from captive, as well as free-ranging lions.

DNA analysis will be carried out on the lions at the Park to ascertain the inbreeding status of the individuals, thus enabling management to take decisions as to future controlled breeding programs and how to further outbreed this population.

The WBRC has another program, called Wild Gene Recovery, in place to collect and bank sperm from lions which die in the wild and in this way, the centre has collected sperm from a number of lions in recent years. This sperm has been cryopreserved, is currently

stored in the WBRC gene bank and is available for use in an artificial insemination program.

The WBRC has pioneered the method of extracting sperm from lions under anaesthetic, and at the same time vasectomising them, using a surgical technique called an "epididymectomy". This has been performed in the wild in two North West Parks Board Game Reserves as well as on private farms. This procedure is used on males which are over-represented and renders them unable to produce cubs, whilst the male retains his testes and therefore his libido. This is important for maintaining the vigor of the male, as well as his appearance (loss of manes may result from a castration). This particular method further enables the WBRC staff to collect and bank the sperm taken from the surgically removed epididymis and to bank this for future use, should the genes of this male be required in a remote populations of lions at a later stage.

With the recent outbreaks of TB in wild populations of lions, it has become important for lion owners and breeders to certify their lions TB free. While sampling and marking these lions, each animal will therefore be tested for TB by performing a TB skin test.

The project began in April 2000 with a program to systematically mark and micro-chip all the lions and to collect tissue samples (blood, hair and skin samples) for DNA analysis. TB skin tests will be performed at the same time.

Valuable information on the reproductive cycle of the lion will be gained and a method for non-invasive monitoring of this cycle will be developed from this project. This will be vital for applying assisted reproduction as a means of counteracting inbreeding and increasing genetic diversity within lion populations and will represent the least stressful means of doing such research. The infusion of "new genetics" into prides threatened with inbreeding using artificial insemination will result in expanded, and therefore healthier, gene pools within lion populations. Genetic diversity is critical to the resilience and therefore, the survival of an isolated population. A sperm and tissue bank for lions for reproductive purposes, DNA analysis and disease studies will also be established.

For more information, please contact Yolan Friedmann or Dr. Paul Bartels of the WBRC at (012) 305 5840, or 082 880 3533/4, e-mail wbrc@global.co.za

Source: From WILDAFRICA.NET 4/18/2000 Your Link With Africa's Wildlife
<http://www.wildnetafrica.com>



Artist: Autumn Beckman

For more information on this article or the organisation, please contact them directly: The Endangered Wildlife Trust in Johannesburg ; Tel: 27-11-486-1102; Fax: 27-11-486-1506; e-mail at ewt@ewt.org.za; website <http://www.ewt.org.za>

Institutions wishing to advertise employment opportunities are asked to send pertinent data by the 10th of each month to: Opportunity Knocks/AKF, 3601 S.W. 29th St., Suite 133, Topeka, KS 66614. Please include closing date for positions available and when setting these dates keep in mind that because of bulk-mail, most readers do not receive the AKF until the middle of the month or later. There is no charge for this service and fax listings of positions which become available close to deadline are accepted. Our fax is (785) 273-1980. Please Note NEW ADDRESS for AAZK !

ANIMAL KEEPER...position open in the West Los Angeles area. Start on an On-Call basis 4-5 days per week. May evolve into a Full and/or Part Time keeper position with full benefits. Qualifications: Two (2) years animal keeping experience. Must consider thisposition as primary employment, and be available 7 days per week. Responsibilities: Cleaning facilities, feeding, handling, and training. Primarily Birds and Primates, but also reptiles, other exotic mammals, marine aquariums, and freshwater pond systems. Send resume to John Heston, Supervisor, Animal Department, 10236 Charing Cross Rd., Los Angeles, CA 90024. E-mail jnheston@playboy.com

ZOOKEEPER/Elephants...The Cameron Park Zoo is seeking a dynamic, energetic individual with paid animal training experience. The primary duties of this position will be daily work with our elephant program two African cows, 24 and 14 years old), and may include additional large animal work (big cats, rhinos, hoofstock). We plan to breed our young cow soon and are working on plans to house a bull. The applicant of choice must have excellent communication skills, be motivated and function in a team environment. We are seeking a person whose personal goals are to commit themselves to a positive working relationship with elephants and keepers alike. If you feel we have described you, please apply. Salary will range from \$1171.00-\$1562.00 monthly plus benefits. Send resumé and application to (or you may fax to number below): City of Waco-Human Resources, Zookeeper Position, P.O. Box 2570, Waco, TX 76702-2570; phone (254) 750-5740; fax (254) 750-5737. City application may be found at www.waco-city-hr.org

ELEPHANT KEEPER...The Oakland Zoo manages a breeding herd of 1.3 African elephants in a progressive protected contact program. We are looking for someone with at least two (2) years experience working with elephants. High school diploma required. Must have training and enrichment experience. Must be willing to make a five-year commitment. Must be willing to learn how to operate a Bobcat® Tractor, backhoe and chain saw. Starting salary: \$11.50 per hour. Excellent benefits. Open until filled. Send resumé and cover letter to: Colleen Kinzley, General Curator, P. O. Box 5238, Oakland, CA 94605; (510) 632-9525 ext. 161; e-mail: colleen@oaklandzoo.org

ZOOKEEPER (full-time)...the following position is available with the City of Lafayette, IN. Applications or resumés are being accepted in the Human Resources Office, 20 N. 6th St., Lafayette, IN 47901. Please contact Kathy Wade, Director of Human Resources at (765) 476-4469 with any questions you may have or e-mail: kwade@city.lafayette.in.us< Position at Columbian Park Zoo with flexible hours which may vary to include evenings and weekends. Responsible for providing proper care and treatment to zoo animals and maintaining a healthy environment. Assists with presentations of educational programs and special events. Performs general maintenance of zoo area. Requires high school diploma or equivalent. Ability to administer minor medical treatments to animals and to monitor their health. Keep daily records related to animal care and inventory. Knowledge of universal health precautions, high risk environments and blood-borne pathogens. Ability to apply safety policies and procedures. Ability to operate a variety of trucks and tools. Ability to provide guidance to other zookeepers. Effective communication skills. Valid driver's license. Salary range up to \$23,108.00 annually.

ANIMAL HANDLER...Animal Entertainment has an immediate opening. Looking for individuals with a professional appearance, good work ethic, and "people skills" (being a ham is an asset). Should enjoy children and public speaking. Must be alert and thoughtful in the care, handling and presentation of animals. Must be a mature, responsible, non-smoker, with the ability to work both independently, and in a harmonious manner with the others. Animal handling and training experience a plus, but willing to train an individual with a "can

do" attitude. Responsibilities include daily care, maintenance, and handling of exotic animal collection; public speaking and program presentation. Must work most weekends. Salary based on 40hr. week at \$7.50 to \$9.50 per hour, plus medical benefits. Two weeks paid vacation. If you enjoy public speaking, are able to lift 50lbs., have a sense of humor, and want to keep company with some amazing Animal Ambassadors, contact: Susan or Dave at (940) 365-9741 after 5 p.m. CT. Send e-mail inquiries or resumé to: critterman@animaled.com; fax resumé to (940) 440-3564; snail mail resumé to: Animal Entertainment, 7151 Cedar Lake Rd., Aubrey, TX 76227.

ZOO KEEPER..Immediate Opening. Private, non-profit otter conservation facility for breeding and study programs, seeking dedicated individual for permanent position. Requires one (1) year experience with exotic animals - experience with mustelids preferred. Responsible for daily husbandry, maintenance of animals and grounds enclosures, diet preparation, and record keeping. Experience with animal restraint and blood drawing preferred. Must be physically strong (able to lift 50 lbs.) and work independently. 40-hour work week including some weekends and holidays. Benefits included. Send letter and resumé to: Otter Conservation Center, Inc., 250 Otter Conservation Rd., Statesboro, GA 30458. Resumés may be faxed to (912) 839-2551.

The following four (4) positions are available at Zoo Atlanta. For all positions send resumés to: Gail Allen, Staffing Coordinator, Human Resources, 800 Cherokee Ave. S.E., Atlanta, GA 30315; or Fax to (404) 624-5943. Please specify which position you are applying for when sending resumé.

WILDLIFE SHOW ASSISTANT...immediate opening - the Wildlife Show Assistant is responsible for assisting the Program Coordinator with the organization and presentation of the Wildlife Show and the care and maintenance of the education animals and their area. Assists in the development and implementation of additional education shows relating to the department. Requires a four-year degree in biology, psychology, or related field. A minimum of two (2) years experience in animal handling in visitor education.

VETERINARY TECHNICIAN...opening for a full-time Vet Tech. Responsible for assisting the veterinarian and other staff with medical tasks. Requires 2-3 years of experience. Exotic animal experience necessary. Must possess a license of Veterinary Technology in the state of Georgia, or meet requirements to obtain one within six months of hire date. Four-year degree a plus. Must be computer literate.

KEEPER II/PANDAS...panda keepers will be responsible for the care and maintenance of the Giant Pandas. Will inspect all animals and exhibits, note the animals' health, appearance and behavior, as well as the condition of the exhibit. Responsible for the cleaning and maintenance of the exhibits, back-up cages and the service areas as well as the feeding and watering of the animals. Prepare daily reports, participate in animal training and enrichment, assist in research projects and educational programming, assist contract veterinarians and veterinary technician in animal care. Requires two (2) years working with bears or other large carnivores. BS/BA in zoology, biology, psychology or related field. Extensive hands-on experience may substitute for formal education. Experience with giant pandas will receive priority. Must be willing to work swing shift.

ELEPHANT/CARNIVORE KEEPER...responsible for the care of the animals in the section and their habitats. The keeper must participate in the care of the collection including training/management in a free contact elephant program. Observes and monitors health and behavior and communicates changes to supervisor. Assists veterinary staff and supports public relations efforts. Maintains exhibits and holding areas. Requires four-year degree in biology, psychology, zoology or related field (sufficient relevant experience will be considered in partial fulfillment of education requirement). Requires elephant handling/training skills. Previous zoo experience or internship a plus. Must have knowledge of animal behavior and diets and ability to recognize abnormalities in animal health/behavior.

CURATORIAL INTERNSHIP...Central Florida teaching zoo is offering a one (1) year, with second year possible extension, supervisory internship. Duties include supervision of students in state-certified teaching zoo program during class and laboratory. Total operating

responsibilities for zoo collection with support from veterinarian/director, assistant director and instructors. Diverse/comprehensive collection includes large/small ungulates, jaguar, reproductive program, herps (including venomous), rare aves, extensive primates and others. Stipend of \$12,000 to \$15,000 (based upon experience) with housing provided. BS/BA in relevant science required. Minimum two (2) year animal care experience in respected institution(s) required. E-mail resumé to: mnpwwdwd@aol.com<

AVICULTURE INTERN...will receive intensive, hands-on training in the care and maintenance of a large bird collection. Will experience all aspects of bird husbandry including general cleaning, handling, incubation, record keeping, public education, etc. Seeking college students or recent graduates with an interest in avian management/biology. Interns will work with the aviculturists for a three-month period. This is a volunteer position with on-site housing provided. Internships available year-round. Send a letter and resumé with references to: Tracy Aviary, 589 East 1300 South, Salt Lake City, UT 84105. ATTN: Kristine McCue/Holly Seitz.

CARNIVORE KEEPER INTERN...six and twelve weeks internships available for applicants 18 years and older. Preference will be given to those pursuing degrees in animal science, zoology, biology, pre-vet and related fields. Interns gain experience in numerous aspects of carnivore husbandry. Species found at the Carnivore Preservation Trust include tigers, jaguars, leopards, snow leopards, clouded leopards, cougars, ocelots, caracals, servals, binturongs, kinkajous and a tayra. Internships are offered continuously. No stipend. Assistance in locating housing available. Please send letter/resumé to: Intern Program, Carnivore Preservation Trust, 1940 Hanks Chapel Road, Pittsboro, NC 27312; or fax (919) 542-4454. For more information, call (919) 542-4684 or e-mail: cptigers@mindspring.com\

HERP INTERNSHIP...The Kentucky Reptile Zoo, a nonprofit organization, is seeking student interns for the 2000 season. The zoo is an educational exhibit, reptile breeding and venom research facility located near Kentucky's Red River Gorge and Natural Bridge State Park. Intern will assist in the captive maintenance of the zoo's reptile collection, collect admissions to the exhibit, give interpretive talks and interact with the public, assist with educational outreach programs, and perform other duties as assigned. In addition, the intern will be responsible for the completion of at least one research project related to the field of herpetology. Intern will not be involved in the handling of any venomous reptiles. Desirable qualifications include a willingness to handle snakes and other reptiles on a daily basis, ability to communicate effectively with people, writing skills, orientation to details, and self-motivation. Students majoring in the biological or natural sciences are preferred. Former interns have arranged for academic credit with their institutions. Benefits include experience with the most extensive and diverse collection of snakes in the area, housing, and \$55/week to cover expenses. Personal transportation is recommended. Starting dates are flexible, but a minimum of three months covering spring (April-June) summer (June-August) and fall (September-November) is required. Deadline application for Fall internships is **30 June 2000**. To apply, send a cover letter and resumé to: Kristen Wiley, Internship Coordinator, Kentucky Reptile Zoo, 200 L & E Railroad, Slade, KY 40376 or e-mail to: kyreptil@pop.mis.net

INTERNSHIPS...the SeaWorld Orlando Education Department has two unique Internship opportunities for college students. The Camp SeaWorld/Adventure Camp Internship provides an opportunity for students to work with SeaWorld's summer camp programs and is offered from May to August. The new Educator Internship which gives students the opportunity to staff various animal attractions and interact with park guests, is offered as a twelve-week Internship during the Spring, Summer and Fall semesters. Contact Jeannie.Thompson@anheuser-busch.com for information on the Camp SeaWorld Internship. Contact Geni.Garza@anheuser-busch.com for information about the Educator Internship. Check out <http://www.seaworld.org> for more information about either internship.

*Check AZA Member Institution job position listings
on the AZA Home Page: <http://www.aza.org>*

*Positions posted with AAZK, Inc. may also be found
on our website at www.aazk.org*

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Title _____

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Mail this application to: AAZK Administrative Offices, 3601 S.W. 29th, Suite 133 Topeka, KS 66614. Make checks/money orders payable to AAZK, Inc. Must be in U. S. FUNDS ONLY. Membership includes a subscription to *Animal Keepers' Forum*. The membership card is good for free admission to many zoos and aquariums in the U.S. and Canada.



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